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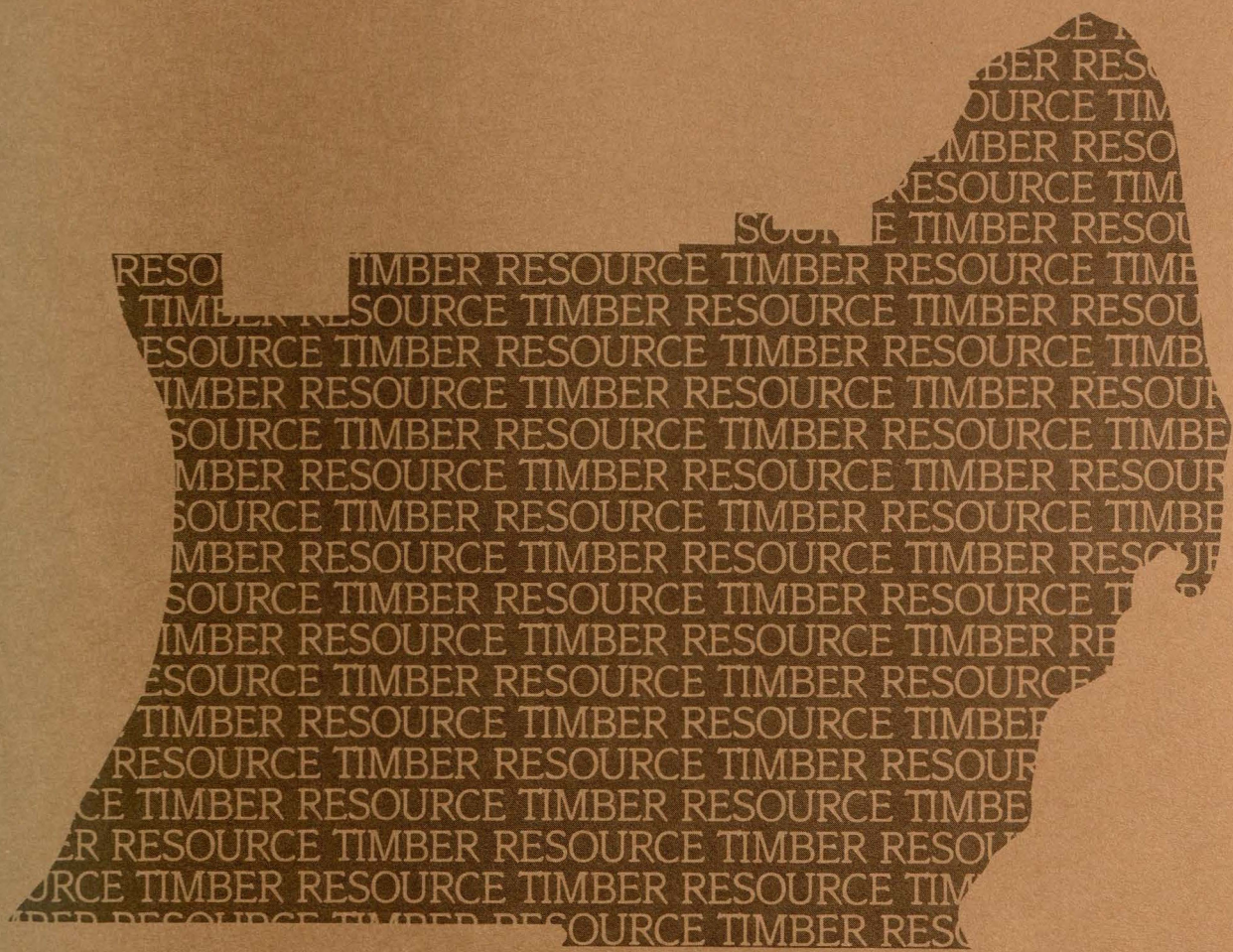
Timber Resource of Michigan's Southern Lower Peninsula, 1980

Jerold T. Hahn



Information contained in this report includes the most commonly used Resources Evaluation statistics. However, additional forest resource data can be provided to interested users. Persons requesting additional information that can be provided from the raw inventory data are expected to pay for the retrieval costs. These costs will vary depending on the complexity of the request, from less than $100 for a relatively simple request to $2,000 for a complex retrieval involving the services of a Resources Evaluation computer programmer. If requests for data conflict with ongoing Resources Evaluation work, requests will be scheduled so as to minimize the impact on the work unit.

Requests for unpublished information may be directed to:

Burton L. Essex
Renewable Resources Evaluation Project
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108

Phone: (612) 642-5282

Area served:Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern, South Dakota, Wisconsin.

North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
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FOREWORD

Forest Inventory and Analysis (formerly called Forest Survey) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974, which was preceded by the McSweeney-McNary Forest Research Act of 1928. Its objective is to periodically inventory the Nation's forest land to determine its extent, condition, and volume of timber, growth, and depletions. This kind of up-to-date information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Resources Evaluation work done in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern South Dakota, and Wisconsin.

Fieldwork for the 1980 Southern Lower Peninsula forest inventory was begun in November 1980 and completed in May 1981. Reports on the three previous surveys of Michigan's timber resource are dated 1935, 1955, and 1966. Similar Resource Bulletins reporting statistical highlights and detailed tables on the other Survey Units in Michigan (see cover) are available. In addition to these statistical reports, a series of reports will be published that will analyze the State's timber resource.

The Michigan Department of Natural Resources contacted all primary wood-using plants in the State and information from this canvass was used to help estimate the quantity of timber products harvested in Michigan.

Aerial photos used in the Southern Lower Peninsula Forest Inventory were furnished by the Michigan Department of Natural Resources and the Huron-Manistee National Forest.

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TIMBER RESOURCE OF MICHIGAN'S SOUTHERN LOWER PENINSULA, 1980

Jerold T. Hahn
Principal Mensurationist

HIGHLIGHTS

Forest Area

- Forest land accounted for 2.5 million acres (18 percent of the Unit's land area) in 1980, compared to 2.9 million acres (20 percent) in 1966.
- Commercial forest land occupied 2.4 million acres (97 percent of the forest land) in 1980, compared to 2.8 million acres (98 percent) in 1966—a 12 percent decline.
- Productive-reserved forest land totaled 81,000 acres in 1980, compared to 31,000 acres in 1966. Since 1966 several State recreation areas have been added that range in size from several to 3,000 acres.
- Nonindustrial private parties owned 2.2 million acres (91 percent of the commercial forest) in 1980.
- The maple-birch forest type (903,000 acres in 1980) increased from 18 percent to 37 percent of commercial forest land to become the dominant forest type, replacing oak-hickory (664,000 acres in 1980), which decreased from 36 percent to 27 percent of commercial forest land.

Timber Volume

- The volume of growing stock in 1980 was 2.4 billion cubic feet, 26 percent greater than the 1.9 billion[1] in 1966, in spite of the 12 percent loss of commercial forest land between surveys.
- Sawtimber volume amounted to 7.9 billion board feet[2] in 1980.
- Hardwoods make up 93 percent of the growing-stock volume.
- Soft maple (398 million cubic feet), select red oak (338 million), and select white oak (309 million) contain the highest volumes, and together account for 42 percent of the growing-stock volume.
- Average growing-stock volume per acre in 1980 was 998 cubic feet (12.6 cords), compared to 692 cubic feet (8.7 cords) in 1966.
- Sixty percent of the sawtimber volume is in grade 3 saw logs.
- The volume in cull trees (rough, rotten, and short-log cull) is 149 million cubic feet; salvable dead tree volume is 31 million cubic feet.

Stand Conditions

- Net annual growth on growing-stock trees was 88 million cubic feet in 1979, compared to 69 million in 1965.
- The net annual growth rate of growing stock was the same in 1979 as it was in 1965—3.6 percent of inventory.
- Net growth averaged 35.6 cubic feet per acre in 1979 and 23.8 cubic feet per acre in 1965.
- Annual mortality of growing stock amounted to 18 million cubic feet (0.7 percent of inventory) in 1979, compared to 15 million (0.7 percent of inventory) in 1965.

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[1]*Published 1966 volumes were adjusted by factors derived from 1980 volume equations to make volumes for the two inventories comparable.*

[2]*International ¼-inch rule.*

- Disease accounted for 39 percent of the mortality in 1979—chiefly diseases of aspen and elm.

- Ninety-two percent of the commercial area is capable of growing trees 51 feet and taller at age 50, and 54 percent of the area can grow trees 71 feet and taller at the same age.

Timber Use

- Timber removals from growing stock in 1979 amounted to 37 million cubic feet (1.5 percent of inventory), compared to 45 million cubic feet (2.3 percent of inventory) in 1965.

- The oaks made up 42 percent of the 1979 removals volume, although they account for only 31 percent of the growing-stock volume.

- Output of timber products totaled 51 million cubic feet in 1978, 97 percent of which was hardwood, and 45 percent of which was saw logs.

- Wood residue from primary plants in 1978 totaled 10.8 million cubic feet only 0.3 million of which were not used.

Biomass

- Live shrub biomass (including trees less than 1-inch in d.b.h.) was highest in the aspen forest type—3,877 pounds per acre (green weight) in 1980.

- Live tree biomass (trees greater than 1-inch in d.b.h.) totaled 138 million green tons (56 tons per acre) in 1980.

- Highest yields of live tree biomass (green weight) are in the oak-hickory forest type (73 tons per acre), the white pine type (65 tons), the maple-birch type (55 tons), and the red pine type (57 tons).

APPENDIX

ACCURACY OF SURVEY

Resources Evaluation information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are only estimates. A measure of reliability of these figures is given by sampling errors. These sampling errors mean that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated.

For example, the estimated growing-stock volume in the Southern Lower Peninsula Unit in 1980, 2,459.4 million cubic feet, has a sampling error of ± 2.80 percent (± 87,836 thousand cubic feet). So, the chances are 2 out of 3 that the growing-stock volume from a 100-percent inventory would fall between 2,547.2 and 2,371.6 million cubic feet (2,459.4 ± 87.8).

The following tabulation shows the combined sampling errors for the 1980 Southern Lower Peninsula Forest Inventory:

Item	Unit totals	Sampling error
Growing stock	(Million cubic feet)	(Percent)
Volume	2,459.4	2.80
Growth	87.8	3.50
Removals	37.3	15.50
Sawtimber	(Million board feet)	
Volume	7,945.5	3.65
Growth	332.3	5.18
Removals	174.1	16.50
Commercial forest land	(Thousand acres)	
Area	2,463.4	1.56

As survey data are broken down into sections smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for growing-stock volume in a particular county is higher than that for total growing-stock volume in the Survey Unit (table 74 shows the sampling errors for estimates smaller than Unit totals).

SURVEY PROCEDURES

The major steps in the survey of the Southern Lower Peninsula Unit were as follows:

1. A total of 76,960 1-acre points were systematically distributed across aerial photos of the entire Unit, except the Huron-Manistee National Forest. These points were classified into land classes, in order to make a preliminary estimate of forest area. Next, a total of 14,450 of these points were stereoclassified as to forest type, stand-size class, and density. Finally, a total of 4,022 points were examined on the ground to correct the preliminary area estimate for classification errors and for actual land use changes since the photos were taken.

	Photo points		Ground plots visited
	Classified	Stereoclassified	
Forest land	14,184	14,184	709
Unproductive forest land	1	1	1
Nonforest land			
With trees	1,973	82	87
Without trees	59,235	0	3,135
Water	1,384	0	68
Questionable	183	183	22
Total	76,960	14,455	4,022

At each of the forest ground plot locations, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. Tree measurements made at these locations and at 162 plots established in 1966 and remeasured in 1980 were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications on land other than National Forest land. Estimates for National Forest land were based on a portion of the 155 plots established in 1976 on commercial forest land on the Manistee National Forest.

2. Growth and mortality on all commercial forest land were estimated using the Stand and Tree Evaluation and Modeling System (STEMS)[3] after the System was adjusted with factors derived from the remeasurement in 1979 and 1980 of permanent sample plots in the Lower Peninsula that were initially established in 1965. STEMS is an individual tree-growth projection system that uses the following stand and tree characteristics to "grow" trees by updating tree diameter and tree status (live, dead, or cut): species, tree diameter, crown ratio, site index, basal area, and average stand diameter. These characteristics were used to produce growth and mortality rates that were adjusted based on ground conditions gained from remeasurement of plots and applied to trees on the tree list to yield an updated tree list. Local volume equations were applied to the original and updated tree lists to estimate volumes of growth and mortality.

3. Under an agreement with the Huron-Manistee National Forest, North Central Station crews established 10-point variable radius plots on the Huron-Manistee Forest in 1976. The Huron-Manistee National Forest provided the Station with the area of commercial forest land by forest type, stand-size class, and density for the Forest, and the Station computed all area and volume data in the same manner non-National Forest data were computed. Area and volume tables were then approved by the Huron-Manistee National Forest staff.

4. Statistics on timber utilization during 1978 were obtained from mill surveys. The Michigan Department of Natural Resources canvassed residential sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-state sawmills, pulpmills, and veneer mills to determine their use of timber from Michigan. Fuelwood and fencepost output was based on a sample of public and private landowners to determine their production of fuelwood and fenceposts, and on a canvass of industrial and public timber owners. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Michigan primary wood-using plants. Timber cut for products by ownership class was determined by a canvass of public and industrial timber owners. The portion of timber cut accounted for by the latter owners was grouped under "farmer and other owners".

5. A total of 2,239 felled trees on 123 active logging operations were measured throughout the State during 1977-1978 to develop wood utilization factors for converting timber products output to timver remocals for saw logs and pulpwood. Factors for all other products were obtained during the 1964-1965 Michigan untilization study.

6. Field data were sent to St. Paul for compiliation.

[3]*For more information on STEMS, see: Belcher, D. L.; Holdaway, M. R.; Brand, G. J. A description of STEMS: The stand and tree evaluation and modeling system. Gen. Tech. Rep. NC-79. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; (In prep.) p.*

COMPARING MICHIGAN'S FOURTH INVENTORY WITH THE THIRD INVENTORY

Data from new forest inventories are often compared with data from earlier inventories to determine trends in forest resources. Changes in procedures and definitions between surveys make it necessary to adjust earlier survey data so that they are comparable to data from the new survey. A consistency check was made for each Forest Survey Unit in Michigan to ensure that the changes observed between inventories reflect actual changes in the resource and not changes in definitions or procedures.

Identifying and Correcting Definitional or Procedural Changes

In Michigan's Southern Lower Peninsula Unit definitional or procedural changes between the 1966 and 1980 inventories included changes in definitions of ownership classes and productive-reserved forest land and in procedures for determining the area of nonforest land by land class, the number of trees by 2-inch diameter class, and the volume equations.

In 1966, State Forest was a separate owner class and included only land on State Forests. Other forested State-owned land was included under the Other Public ownership class. In 1980, the State owner class included all State land. However, State-owned commercial forest land outside the State Forest areas is small in the Northern Lower Peninsula and general comparisons may be made between the 1966 and 1980 State estimates.

Some mining companies were called diversified forest industry in 1966 and classed under the Forest Industry ownership class. In 1980 these companies were classed under Miscellaneous Private Corporation ownership class. Therefore, a comparison of statistics for Forest Industry owner between 1966 and 1980 is only possible if you combine the Forest Industry and Miscellaneous Private Corporation ownerships in 1980.

During the 1966 Forest Inventory, Christmas tree plantations were classified as commercial forest land whereas they are now classified as productive-reserved forest land. The 1966 commercial forest and productive-reserved areas were adjusted so that they are comparable to 1980 estimates.

In the 1966 Forest Inventory, the 1964 Census of Agriculture estimates of cropland and pasture and rangeland areas were used in our inventory report tables. The 1980 inventory estimates of cropland and pasture and rangeland come from aerial photointerpretation done by Resources Evaluation personnel in St. Paul. The published 1966 estimates of cropland and pasture and rangeland areas were adjusted to be compatible with 1980 estimates.

The procedures used to determine the number of growing-stock trees by species group and 2-inch diameter class have improved between the 1966 and 1980 forest inventories. The procedure used in 1966 over-estimated the number of growing-stock trees, especially in the lower diameter classes. Adjustments were made in the 1966 estimates of number of trees so that differences between 1966 and 1980 represent actual changes in the resource, not changes in procedures. Additional adjustments were made in the 1966 number of growing-stock trees to reflect the transfer of Christmas tree plantations to productive-reserved forest land.

The volume equations used in 1980 gave more accurate estimates of tree volume than those used in 1966. Therefore, the 1966 volumes were adjusted by factors derived from the 1980 volume equations to make them comparable to 1980 volumes.

LOG GRADE

In Michigan's Southern Lower Peninsula the butt log of every sawtimber tree on every full permanent sample plot was graded for quality. Additionally, all of the logs in a smaller sample of trees throughout the State (2,239 trees) were graded. The volume yield by log grade for each tree in the latter sample was used to distribute the volume of trees in the former sample into log-grade classes. The resulting volumes by log-grade classes were expanded to provide an estimate for the entire Unit.

Logs were graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber."[4] The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded as follows:

[4]*Vaughn, C. L.; Wollin, C. A.; McDonald, K. A.; Bulgrin, E. H. Hardwood log grades for standard lumber. Res. Pap. FPL 63. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory; 1966. 52 p.*

Forest Service standard grades for hardwood factory saw logs

Grading factors		Specifications							
		Log grade 1			Log grade 2				Log grade 3
Position in tree		Butts only	Butts and uppers		Butts and uppers				Butts and uppers
Scaling diameter, inches		[1]13-15	16-19	20+	[2]11+		12+		8+
Length without trim, feet			10+		10+	8-9	10-11	12+	8+
Required clear cuttings[3] of each of three best faces[4]	Min. length, feet	7	5	3	3	3	3	3	2
	Max. + number	2	2	2	2	2	2	3	No Limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep and crook allowance	For logs with less than one-fourth of end in sound defects		15 percent			30 percent			50 percent
	For logs with more than one-fourth of end in sound defects		10 percent			20 percent			35 percent
Maximum scaling deduction			40 percent[5]			50 percent[6]			50 percent

[1]Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.
[2]Ten-inch logs of all species can be #2 if they otherwise meet requirements for small #1's.
[3]A clear cutting is a portion of a face, extending the width of the face, that is free of defects.
[4]A face is one-fourth of the surface of the log as divided lengthwise.
[5]Otherwise #1 logs with 41-60 percent deductions can be #2.
[6]Otherwise #2 logs with 51-60 percent deductions can be #3.

Forest Service standard specifications for hardwood construction logs (tie and timber logs)[1]

Position in tree		Butt and upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		One-fourth of the diameter at the small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of one-third of the log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed one-third of the log diameter at point of occurrence.
	Holes	Any number provided none has a diameter over one-third of the log diameter at point of occurrence, and none extends more than 3 inches into included timber.[2]
Unsound surface defects		Same requirements as for sound defects if they extend into included timber.[2] No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit one shake not to exceed one-fourth the scaling diameter and will admit a longitudinal split not extending more than 5 inches into the contained timber.

[1]These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only nonfactory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection for construction logs is given first priority, it may be necessary to subdivide the class into grades.

[2]Included timber is always square, and dimension is judged from small end.

Softwood species were graded according to the following specifications on the following page.

Log Grades for Eastern White Pine

Log grade	Minimum size Diameter	Minimum size Length[1]	Sweep or crook allowance	Total cull allowance including sweep	Maximum weevil injury	Allowable knot size (inches)[2] on three best faces or minimum clearness on four faces
	(Inches)	*(Feet)*	*(Percent)*		*(Number)*	*(Inches)*
1	12 & 13	8-16	20	50	0	Four faces clear full length
	14+	10-16	20	50	0	Two faces clear full length, or four faces clear 50 percent length (6 foot min. length)[3]
2	6+	8-16	30	50	0	Sound knots 1.e[4] D/6 and less than 3 inches.[5] Unsound knots: 1.e. 1½ inches and for: butt, lots 1.e. D/12, upper logs 1.e.D/10, or four faces clear 50 percent of length
3	6+	8-16	40	50	8-foot logs 1 weevil 10-foot+ logs: 2 weevils	Sound knots 1.e.D/3 and less than 5 inches. Unsound knots 1.e. D/6 and less than 2½ inches.
4	6+	8-16	50	50	No limit	No limit

[1]Plus trim.
[2]Disregard all knots less than inch diameter in all grades.
[3]The sum of the diameter of sound knots plus twice the sum of the diameter of unsound knots (in inches) is less than or equal to half of the diameter of the log (inches).
[4]l.e. means less than or equal to.
[5]D means d.i.b. of log at location of knot.

Log Grades for Jack Pine and Red Pine

Grade 1: logs with three or four clear faces.[5]

Grade 2: logs with one or two clear faces.

Grade 3: logs with no clear faces.

After the tentative log grade is established, the log will be degraded one grade for each of the following, except that no log can be degraded below grade 3. Net scale after deduction for defect must be at least 50 percent of the gross contents of the log.

1. *Sweep.* Degrade any tentative 1 or 2 log one grade if sweep amounts to 3 or more inches and equals or exceeds one third the diameter inside bark at small end.

2. *Heart rot.* Degrade any tentative 1 or 2 log one grade if conk, massed hyphae, or other evidence of advanced heart rot is found anywhere in it.

[5]*A face is one fourth of the circumference in width extending full length of the log. Clear faces are those free of: knots measuring more than ½-inch in diameter, overgrown knots of any size, holes more than ¼-inch in diameter. Faces may be rotated to obtain the maximum number of clear ones.*

Log Grades For All Other Softwood Logs

Grade 1

1. Logs must be 16 inches in diameter or larger, 10 feet in length or longer, and have not more than 30 percent of gross scale deducted for defect.

2. Logs must be at least 75 percent clear on each of three faces.

3. All knots outside clear cutting must be sound and not more than 2-inches in size.

Grade 2

1. Logs must be 12 inches in diameter or larger, 10 feet in length or longer, and have a net scale of at least 50 percent of the gross contents of the log after deduction for defect.

2. Logs must be at least 50 percent clear on each of three faces or 5 percent clear on two faces.

Grade 3

1. Logs must be 6 inches in diameter or larger, 8 feet in length or longer, and have a net scale of at least 50 percent of the gross contents of the log after deduction for defect.

Note: (A) Diameters are diameter inside bark (d.i.b.) at small end of log.
(B) Percent clear refers to percent clear in one continuous section.

TREE SPECIES GROUPS IN MICHIGAN'S SOUTHERN LOWER PENINSULA UNIT[6]

SOFTWOODS
- Eastern white pine. ..... *Pinus strobus*
- Red pine. ..... *Pinus resinosa*
- Jack pine. ..... *Pinus banksiana*
- White spruce. ..... *Picea glauca*
- Black spruce. ..... *Picea mariana*
- Balsam fir. ..... *Abies balsamea*
- Eastern hemlock. ..... *Tsuga canadensis*
- Tamarack. ..... *Larix laricina*
- Northern white-cedar. ..... *Thuja occidentalis*

OTHER SOFTWOODS
- Eastern redcedar. ..... *Juniperus virginiana*
- Austrian pine. ..... *Pinus nigra*
- Scotch pine. ..... *Pinus sylvestris*

HARDWOODS
- White oaks
  - White oak. ..... *Quercus alba*
  - Swamp white oak. ..... *Quercus bicolor*
  - Bur oak. ..... *Quercus macrocarpa*
  - Chinkapin oak. ..... *Quercus muehlenbergii*
- Select red oak
  - Northern red oak. ..... *Quercus rubra*
- Other red oaks
  - Scarlet oak. ..... *Quercus coccinea*
  - Northern pin oak. ..... *Quercus ellipsoidalis*
  - Pin oak. ..... *Quercus palustris*
  - Black oak. ..... *Quercus velutina*
- Hickories
  - Bitternut hickory. ..... *Carya cordiformis*
  - Pignut hickory. ..... *Carya glabra*
  - Shellbark hickory. ..... *Carya laciniosa*
  - Shagbark hickory. ..... *Carya ovata*
  - Mockernut hickory. ..... *Carya tomentosa*
- Yellow birch. ..... *Betula alleghaniensis*
- Hard maples
  - Sugar maple. ..... *Acer saccharum*
  - Black maple. ..... *Acer nigrum*
- Soft maples
  - Red maple. ..... *Acer rubrum*
  - Silver maple. ..... *Acer saccharinum*
- American beech. ..... *Fagus grandifolia*
- Ashes
  - White ash. ..... *Fraxinus americana*
  - Black ash. ..... *Fraxinus nigra*
  - Green ash. ..... *Fraxinus pennsylvanica*
- Balsam poplar. ..... *Populus balsamifera*
- Eastern Cottonwood. ..... *Populus deltoides*
- Aspens
  - Bigtooth aspen. ..... *Populus grandidentata*
  - Quaking aspen. ..... *Populus tremuloides*
- Basswood. ..... *Tilia americana*
- Yellow poplar. ..... *Liriodendron tulipifera*
- Black walnut. ..... *Juglans nigra*
- Black cherry. ..... *Prunus serotina*
- Butternut. ..... *Juglans cinerea*
- Elms
  - American elm ..... *Ulmus americana*
  - Slippery elm. ..... *Ulmus rubra*
  - Rock elm. ..... *Ulmus thomassii*
- Paper birch. ..... *Betula papyrifera*

OTHER HARDWOODS
- Boxelder. ..... *Acer negundo*
- River birch. ..... *Betula nigra*
- Black willow. ..... *Salix nigra*
- Ohio buckeye. ..... *Aesculus glabra*
- Flowering dogwood. ..... *Cornus florida*
- Honey locust. ..... *Gleditsia triacanthos*
- Osage-orange. ..... *Maclura pomifera*
- Black tupelo. .... *Nyssa sylvatica* var. sylvatica
- Sycamore. ..... *Platanus occidentalis*
- Black locust. ..... *Robinia psuedoacacia*
- Sassafras. ..... *Sassafras albidum*

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
1,000 board feet (International ¼-inch log rule) = 3.48 cubic meters.
Breast height = 1.4 meters above the ground.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.
1 pound = 0.454 kilogram.
1 ton = 0.907 metric ton.

[6]*The common and scientific names are based on, Little, Elbert L. Check list of native and naturalized trees of the United States. Agric. Handbk. 541. Washington, D.C.: U.S. Department of Agriculture, Forest Service, 1979. 375 p.*

DEFINITION OF TERMS

Acceptable trees.—Growing-stock trees of commercial species that meet specified standards of size and quality but do not qualify as desirable trees.

Area-condition classes.—*Class 10.*—Areas fully stocked with desirable trees but not overstocked.

Class 20.—Areas fully stocked with desirable trees but overstocked with all live trees.

Class 30.—Areas medium to fully stocked with desirable trees and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.—Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.—Areas poorly stocked with desirable trees but fully stocked with growing-stock trees.

Class 60.—Areas poorly stocked with desirable trees but with medium to full stocking of growing-stock trees.

Class 70.—Areas poorly stocked with desirable trees and poorly stocked with growing-stock trees.

Basal area.—The area in square feet of the cross section at breast height of a single tree. When the basal area of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass.—The above-ground volume of all live trees (including bark and foliage) reported in green tons. Biomass is made up of 5 components:

Growing-stock bole.—Biomass of a growing-stock tree from a 1-foot stump to a variable 4-inch top.

Growing-stock tops and limbs.—Biomass of a growing-stock tree from a 1-foot stump minus the growing-stock bole.

Cull bole.—Biomass of a cull tree from a 1-foot stump to a variable 4-inch top.

Cull tops and limbs.—Biomass of a cull tree from a 1-inch stump minus the cull bole.

1- to 5-inch trees.—Biomass of all live trees 1- to 5-inches in diameter at breast height.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.) Also see definition of pastured commercial forest land.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.—Lands owned by counties and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Cull.—Portions of a tree that are unusable for industrial wood products, because of rot, form, or other defect.

Desirable trees.—Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

Diameter classes.—A classification of trees based on diameter outside bark, measured at breast height (4- feet above the ground). (Note: d.b.h. is the common abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h. inclusive).

Farm.—Either a place operated as a unit of 10 or more acres from which the sale of agricultural products totals $50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products for a year amounts to at least $250. Places having less than the $50 or $250 minimum estimated sales in a given year are also counted as farms if they can normally be expected to produce goods in sufficient quantity to meet the requirements of the definition.

Farmer-owned land.—Land owned by farm operators. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide. Also see definitions for land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, and water.

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants.

Forest trees.—Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Forest type.—A classification of forest land based upon the species forming a plurality of live tree stocking. Major forest types in Michigan are:

Jack pine.—Forests in which jack pine comprises a plurality of the stocking. (Common associates include eastern white pine, red pine, aspen, birch, and maple.)

Red pine.—Forests in which red pine comprises a plurality of the stocking. (Common associates include eastern white pine, jack pine, aspen, birch, and maple.)

White pine.—Forests in which eastern white pine comprises a plurality of the stocking. (Common associates include red pine, jack pine, aspen, birch, and maple.)

Balsam fir.—Forests in which balsam fir and white spruce comprise a plurality of stocking with balsam fir the most common. (Common associates include white spruce, aspen, maple, birch, northern white-cedar, and tamarack.)

White spruce.—Forests in which white spruce and balsam fir comprise a plurality of the stocking with white spruce the most common. (Common associates include balsam fir, aspen, maple, birch, northern white-cedar, and tamarack.)

Black spruce.—Forests in which swamp conifers comprise a plurality of the stocking with black spruce the most common. (Common associates include tamarack and northern white-cedar.)

Northern white-cedar.—Forests in which swamp conifers comprise a plurality of the stocking with northern white-cedar the most common. (Common associates include tamarack and black spruce.)

Tamarack.—Forests in which swamp conifers comprise a plurality of the stocking with tamarack the most common. (Common associates include black spruce and northern white-cedar.)

Oak-hickory.—Forests in which northern red oak, white oak, bur oak, or hickories, singly or in combination, comprise a plurality of the stocking. (Common associates include jack pine, beech, yellow-poplar, elm, and maple.)

Elm-ash-soft maple.—Forests in which lowland elm, ash, cottonwood, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include birches, spruce, and balsam fir.)

Maple-birch.—Forests in which sugar maple, basswood, yellow birch, upland American elm, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include white pine, elm, hemlock, and basswood.)

Aspen.—Forests in which quaking aspen or bigtooth aspen, singly or in combination, comprise a plurality of the stocking. (Common associates include balsam poplar, balsam fir, and paper birch.)

Paper birch.—Forests in which paper birch comprises a plurality of the stocking. (Common associates include maple, aspen, and balsam fir.)

Exotic.—Forests in which species not native to Michigan comprise a plurality of the stocking. (Mostly scotch pine plantations.)

Gross area.—The entire area of land and water as determined by the Bureau of the Census, 1970.

Growing-stock trees.—Live trees of commercial species qualifying as desirable and acceptable trees. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum 4.0 inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs. Cubic feet can be converted to cords by multiplying by 79 cubic feet per solid wood cord.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.—Includes former croplands, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing, by cultivation, seeding, irrigation, or clearing of trees or brush and less than 16.7 percent stocked with live trees.

Indian land.—Tribal lands held in fee but administered by the Federal Government.

Land area.—A. *Bureau of the Census.* The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

B. *Forest Survey.* The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Live trees.—Growing-stock, rough and rotten trees 1 inch d.b.h. and larger.

Log grades.—A classification of logs based on external characteristics as indicators of quality or value. (See Appendix for specific grading factors used.)

Logging residues.—The unused growing stock portions of trees cut or killed by logging.

Maintained road.—Any road, hard-topped or other surfaces, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.—Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Merchantable.—Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

Miscellaneous Federal land.—Federal land other than National Forest, and land administered by the Bureau of Land Management.

Miscellaneous private land.—Privately owned land other than forest-industry and farmer-owned land.

Mortality.—The volume of sound wood in growing-stock and sawtimber trees that die annually.

National Forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Net annual growth of growing-stock.— The annual change in volume of sound wood in live-sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber.—The annual change in the volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Net volume.—Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in area, to qualify as nonforest land.)

a. *Nonforest land without trees.*—Nonforest land with no live trees present.

b. *Nonforest land with trees.*—Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other removals.—Growing-stock trees removed but not utilized for products, or trees left standing but "removed" from the commercial forest land classification by land use change. Examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Ownership.—Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.—The amount of commercial forest land owned by one owner, regardless of the number or parcels.

Owner tenure.—The length of time a property has been held by the owner.

Physiographic class.—A measure of soil and water conditions that affect tree growth on a site. Physiographic classes used in Resources Evaluation inventories are:

Xeric sites.—Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Xeromesic sites.—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. Example: dry oak ridge.

Mesic sites.—Deep, well-drained soils. Growth and species occurrence are limited only by climate.

Hydromesic sites.—Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent. Example: better drained bottomland hardwood sites.

Hydric sites.—Very wet sites where excess water seriously limits both growth and species occurrence. Example: wet, frequently flooded river bottoms and spruce bogs.

Plant byproducts.—Plant residues used for products such as mulch, pulp chips, and fuelwood.

Plant residues.—Wood and bark materials generated at manufacturing plants during production of other products.

Poletimber stands.—(See stand-size class.)

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches d.b.h., but smaller than sawtimber size.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land but withdrawn from timber utilization through statute, administrative regulation, designation, or exclusive use for Christmas tree production, as indicated by annual shearing.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet Regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume in a tree is rotten.

Rough trees.—(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet Regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Roundwood products.—Logs, bolts, or other round sections (including chips from roundwood) cut from trees for industrial or consumer uses. (Note: Includes saw logs, veneer logs and bolts; cooperage logs and bolts; pulpwood; fuelwood; piling; poles; posts; hewn ties; mine timbers; and various other round, split, or hewn products.)

Salvable dead trees.—Standing or down dead trees that are considered merchantable by Regional standards.

Saplings.—Live trees 1.0 to 5.0 inches d.b.h.

Sapling-seedling stands.—(See stand-size class.)

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) for softwoods of 7 inches (9 inches for hardwoods) or other combinations of size and defect specified by Regional standards.

Saw log portion.—That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber stands.—(See stand-size class.)

Sawtimber trees.—Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting Regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. Hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume.—Net volume of the saw log portion of live sawtimber in board feet, International inch rule, from stump to a minimum 7 inches top diameter outside bark (d.o.b.) for softwoods and a minimum 9 inches top d.o.b. for hardwoods.

Seedlings.—Live trees less than 1.0 inch d.b.h. that areexpected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Short-log (rough tree).—Sawtimber-size trees of commercial species that contain at least one merchantable 8-to 11-foot saw log but not a 12-foot saw log.

Shrub biomass.—The total above-ground weight (including the bark) of selected shrubs and trees less than 1 inch d.b.h.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.—An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.—A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class.—Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.—The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.—A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber or seedlings and saplings.

a. *Sawtimber stands.*—Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

b. *Poletimber stands.*—Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

c. *Sapling-seedling stands.*—Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and/or seedlings.

d. *Nonstocked stands.*—Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.—Land owned by States, or land leased to these governmental units for 50 years or more.

Stocking.—The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h.

Stands are grouped into the following stocking classes:

Overstocked stands.—Stands in which stocking of trees is 134.0 percent or more.

Fully stocked stands.—Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium stocked stands.—Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly stocked stands.—Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.—Commercial forest land on which stocking of trees is less than 16.7 percent.

Timber removals from growing stock.—The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals.

Timber removals from sawtimber.—The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output.—All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs,

bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree biomass.—The total aboveground weight (including the bark) of all trees 1 to 5 inches in d.b.h., and the total aboveground weight (including the bark) from a 1-foot stump for trees more than 5 inches in diameter.

Tree size class.—A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land.—Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural conditions because of adverse site conditions. (Note: Adverse conditions include shallow soils, dry climate, poor drainage, high elevation, steepness, and rockiness.

Upper stem portion.—That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Urban and other areas.—Areas within the legal boundaries of cities andtowns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards, cemeteries, roads; railroads; airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified land use class.

Water.—(a) *Bureau of the Census.*—Streams, sloughs, estuaries, and canals more than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds more than 40 acres in area.

(b) *Noncensus.*—The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Wooded pasture.—Improved pasture with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing.

Wooded strip.—An acre or more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide.

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Table 1.--Area of land by land class, Southern Lower Peninsula, Michigan, 1966[1/] and 1980

(In thousand acres)

Land class	1966[1/]	1980
FOREST LAND		
Commercial forest		
Jack pine	12.3	12.6
Red pine	36.5	31.5
White pine	17.6	21.5
Balsam fir-white spruce	16.1	7.5
Black spruce	--	--
Northern white-cedar	10.1	13.0
Tamarack	20.5	4.4
Oak-hickory	1,016.5	663.6
Elm-ash-soft maple	719.4	548.6
Maple-birch	501.6	903.3
Aspen	405.7	184.4
Paper birch	23.7	6.6
Exotic	32.2	26.3
Nonstocked	--	40.1
Subtotal	2,812.2	2,463.4
Noncommercial forest land		
Unproductive	14.0	4.9
Productive-reserved	30.9	80.8
Subtotal	44.9	85.7
Total	2,857.1	2,549.1
NONFOREST LAND		
Cropland	7,188.3	8,997.8
Pasture and range	628.2	423.4
Other	3,846.7	2,516.5
Total	11,663.2	11,937.7
TOTAL LAND	[2/]14,520.3	[3/]14,486.8
WATER (BUREAU OF THE CENSUS)	[2/]166.4	[3/]199.9
TOTAL LAND AND WATER	[2/]14,686.7	[3/]14,686.7

[1/]Figures have been adjusted from those published after the 1966 survey to conform to 1980 areas because of changes in survey procedures and definitions.

[2/]U.S. Department of Commerce, Bureau of Census. 1950.

[3/]U.S. Department of Commerce, Bureau of Census, 1970. Area Measurement Reports, GE-20, No. 1.

Table 2.--Area of land by land use class and county,
Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Land use class	All counties	County										
		Allegen	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
FOREST LAND												
Commercial forest	2,463.4	137.4	111.2	66.1	44.1	76.1	54.0	30.5	45.5	44.0	27.4	45.0
Unproductive forest	4.9	--	4.3	--	--	--	--	--	--	--	--	0.6
Productive reserved	80.8	--	4.4	1.2	--	0.5	--	0.5	--	--	--	--
Total	2,549.1	137.4	119.9	67.3	44.1	76.6	54.0	31.0	45.5	44.0	27.4	45.6
NONFOREST LAND												
Nonforest with trees:												
Cropland with trees	43.2	--	--	--	--	--	--	4.0	--	4.2	4.6	--
Improved pasture with trees	4.7	4.5	--	--	--	--	--	--	--	--	--	--
Wooded strips	182.6	3.4	4.0	9.6	4.5	9.4	10.8	--	--	9.0	2.7	17.3
Idle farmland with trees	8.7	--	--	--	--	--	--	--	--	--	--	--
Marsh with trees	73.4	5.4	--	--	--	--	6.9	--	--	--	3.3	1.8
Urban and other windbreaks	--	--	--	--	--	--	--	--	--	--	--	--
Windbreaks	28.3	--	4.0	--	--	--	--	--	--	--	--	4.0
Wooded pasture	9.4	--	--	--	4.5	--	--	--	--	--	--	--
Subtotal	350.3	13.3	8.0	9.6	9.0	9.4	17.7	4.0	--	13.2	10.6	23.1
Nonforest without trees:												
Cropland without trees	8,698.6	268.7	190.9	175.2	248.2	260.3	181.4	323.8	298.5	250.4	263.0	251.0
Improved pasture without trees	418.7	46.6	3.6	14.3	--	28.7	7.2	--	--	--	21.5	14.3
Idle farm without trees	15.3	--	--	--	--	4.5	3.6	--	--	--	--	3.6
Marsh without trees	132.4	--	--	--	3.6	7.2	10.8	--	3.6	--	--	3.6
Other farm-farmstead	256.0	28.7	3.6	3.6	8.1	21.5	7.2	--	3.6	--	17.9	10.8
Urban and other	2,032.3	30.6	28.7	101.0	10.8	45.7	32.1	7.2	14.3	103.3	21.5	32.3
Noncensus water	34.1	3.3	--	--	--	--	--	--	--	--	--	--
Subtotal	11,587.4	377.9	226.8	294.1	270.7	367.9	242.3	331.0	320.0	353.7	323.9	315.6
Total	11,937.7	391.2	234.8	303.7	279.7	377.3	260.0	335.0	320.0	366.9	334.5	338.7
TOTAL LAND	1/14,486.8	528.6	354.7	371.0	323.8	453.9	314.0	366.0	365.5	410.9	361.9	384.3
WATER (BUREAU OF THE CENSUS)	1/199.9	7.1	10.7	2.8	7.1	4.4	9.2	0.7	0.6	4.5	0.3	2.3
TOTAL LAND AND WATER	1/14,686.7	535.7	365.4	373.8	330.9	458.3	323.2	366.7	366.1	415.4	362.2	386.6

(Table 2 continued on next page)

1/U.S. Department of Commerce, Bureau of the Census, 1970. Area Measurement Reports, GE-20, No. 1.

(Table 2 continued)

Land use class	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
FOREST LAND												
Commercial forest	56.1	42.1	37.2	83.4	66.6	122.6	81.0	47.7	69.1	45.0	35.1	145.3
Unproductive forest	--	--	--	--	--	--	--	--	--	--	--	--
Productive reserved	1.3	--	1.4	4.0	6.8	1.0	2.5	0.5	9.0	1.2	0.1	--
Total	57.4	42.1	38.6	87.4	73.4	123.6	83.5	48.2	78.1	46.2	35.2	145.3
NONFOREST LAND												
Nonforest with trees:												
Cropland with trees	--	--	--	4.0	--	9.0	4.1	--	--	--	--	--
Improved pasture with trees	0.2	--	--	--	--	--	--	--	--	--	--	--
Wooded strips	--	--	8.5	4.0	13.0	--	--	12.8	--	--	8.5	--
Idle farmland with trees	--	--	--	--	--	--	--	--	4.0	--	--	--
Marsh with trees	4.2	--	--	4.2	--	--	6.8	--	4.2	--	--	--
Urban and other windbreaks	--	--	--	--	--	--	--	--	--	--	--	--
Windbreaks	--	--	--	4.0	--	--	--	--	--	4.1	--	--
Wooded pasture	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal	4.4	--	8.5	16.2	13.0	9.0	10.9	12.8	8.2	4.1	8.5	--
Nonforest without trees:												
Cropland without trees	444.8	243.2	284.8	302.4	138.6	273.2	286.8	335.5	217.5	154.2	233.8	214.1
Improved pasture without trees	--	--	3.6	--	21.5	50.2	--	21.5	7.2	3.6	--	35.9
Idle farm without trees	--	--	--	--	--	--	--	--	--	--	--	--
Marsh without trees	3.6	--	--	3.6	12.5	--	--	10.8	3.6	--	3.6	15.7
Other farm-farmstead	--	--	7.2	--	10.8	7.2	--	7.2	7.2	3.6	10.8	14.3
Urban and other	14.0	72.4	25.1	37.2	89.7	78.9	39.6	39.5	44.2	92.5	64.6	22.1
Noncensus water	--	--	--	--	--	6.4	--	6.4	--	3.1	--	8.5
Subtotal	462.4	315.6	320.7	343.2	273.1	415.9	326.4	420.9	279.7	257.0	312.8	310.6
Total	466.8	315.6	329.2	359.4	286.1	424.9	337.3	433.7	287.9	261.1	321.3	310.6
TOTAL LAND	524.2	357.7	367.8	446.8	359.5	548.5	420.8	481.9	366.0	307.3	356.5	455.9
WATER (BUREAU OF THE CENSUS)	3.3	0.7	2.1	12.1	11.7	7.0	2.8	4.5	7.0	0.5	4.4	4.9
TOTAL LAND AND WATER	527.5	358.4	369.9	458.9	371.2	555.5	423.6	486.4	373.0	307.8	360.9	460.8

(Table 2 continued on next page)

(Table 2 continued)

Land use class	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
FOREST LAND												
Commercial forest	164.6	82.2	77.5	82.7	87.9	59.9	50.1	52.8	83.7	102.0	72.0	35.5
Unproductive forest	--	--	--	--	--	--	--	--	--	--	--	--
Productive reserved	1.2	22.1	0.2	--	1.1	--	0.1	--	--	4.2	10.8	6.7
Total	165.8	104.3	77.7	82.7	89.0	59.9	50.2	52.8	83.7	106.2	82.8	42.2
NONFOREST LAND												
Nonforest with trees												
Cropland with trees	--	4.6	--	--	--	--	--	--	4.1	--	4.6	--
Improved pasture with trees	--	--	--	--	--	--	--	--	--	--	--	--
Wooded strips	--	8.8	--	--	4.1	8.5	12.1	4.1	14.9	8.5	4.1	--
Idle farmland with trees	--	2.0	--	--	--	--	--	--	--	--	2.7	--
Marsh with trees	--	6.9	7.6	--	--	2.7	4.2	--	4.2	11.0	--	--
Urban and other windbreaks	--	--	--	--	--	--	--	--	--	--	--	--
Windbreaks	--	4.1	--	--	4.0	--	4.1	--	--	--	--	--
Wooded pasture	--	--	--	--	--	--	2.2	2.7	--	--	--	--
Subtotal	--	26.4	7.6	--	8.1	11.2	22.6	6.8	23.2	19.5	11.4	--
Nonforest without trees												
Cropland without trees	50.8	126.3	199.8	328.6	275.6	191.7	496.4	260.7	393.1	186.2	262.3	86.8
Improved pasture without trees	21.5	25.1	21.5	3.6	7.2	17.9	6.3	3.6	--	21.5	10.8	--
Idle farm without trees	--	--	--	--	--	--	--	--	--	3.6	--	--
Marsh without trees	3.6	3.6	3.6	3.6	10.8	7.0	10.8	--	--	7.2	--	--
Other farm-farmstead	3.6	7.2	3.6	17.9	10.8	7.2	7.2	3.6	3.6	7.2	7.2	3.6
Urban and other	69.2	261.8	46.6	84.3	68.1	28.7	21.5	17.9	17.9	34.2	80.2	254.6
Noncensus water	6.4	--	--	--	--	--	--	--	--	--	--	--
Subtotal	155.1	424.0	275.1	438.0	372.5	252.5	542.2	285.8	414.6	259.9	360.5	345.0
Total	155.1	450.4	282.7	438.0	380.6	263.7	564.8	292.6	437.8	279.4	371.9	345.0
TOTAL LAND	320.9	554.7	360.4	520.7	469.6	323.6	615.0	345.4	521.5	385.6	454.7	387.2
WATER (BUREAU OF THE CENSUS)	11.3	20.8	5.6	0.3	11.0	7.9	--	0.2	3.3	8.0	8.0	12.8
TOTAL LAND AND WATER	332.2	575.5	366.0	521.0	480.6	331.5	615.0	345.6	524.8	393.6	462.7	400.0

Table 3.--Area of commercial forest land by ownership class and county, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Ownership class	All counties	County										
		Allegen	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
National Forest	12.9	--	--	--	--	--	--	--	--	--	--	--
Bureau of Land Mgmt.	--	--	--	--	--	--	--	--	--	--	--	--
Miscellaneous federal	7.6	--	--	--	--	4.2	--	--	--	--	--	--
Indian	--	--	--	--	--	--	--	--	--	--	--	--
State	149.3	37.1	23.5	--	--	--	--	--	--	--	2.9	--
County and municipal	52.6	--	--	--	--	5.1	--	--	--	4.2	--	--
Forest industry	--	--	--	--	--	--	--	--	--	--	--	--
Farmer	1,150.9	10.1	45.2	25.0	44.1	22.2	21.3	18.8	40.4	36.9	8.0	25.9
Misc. private-corp.	140.2	6.7	--	8.4	--	4.9	--	--	2.5	--	3.4	--
Misc. private-indiv.	949.9	83.5	42.5	32.7	--	39.7	32.7	11.7	2.6	2.9	13.1	19.1
All owners	2,463.4	137.4	111.2	66.1	44.1	76.1	54.0	30.5	45.5	44.0	27.4	45.0

(Table 3 continued)

(Table 3 continued)

Ownership class	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
National Forest	--	--	--	--	--	--	--	--	--	--	--	1.3
Bureau of Land Mgmt.	--	--	--	--	--	--	--	--	--	--	--	--
Miscellaneous federal	--	--	--	--	--	--	--	--	--	--	--	--
Indian	--	--	--	--	--	--	--	--	--	--	--	--
State	--	3.3	--	--	1.5	5.5	2.6	--	3.3	--	2.0	13.6
County and municipal	--	--	--	--	5.9	--	--	--	--	4.7	--	--
Forest industry	--	--	--	--	--	--	--	--	--	--	--	--
Farmer	51.9	32.1	28.9	42.7	18.1	20.2	64.4	36.7	39.2	33.6	28.0	39.5
Misc. private-corp.	--	--	--	3.4	2.1	18.6	4.9	5.9	3.4	6.7	--	3.4
Misc. private-indiv.	4.2	6.7	8.3	37.3	39.0	78.3	9.1	5.1	23.2	--	5.1	87.5
All owners	56.1	42.1	37.2	83.4	66.6	122.6	81.0	47.7	69.1	45.0	35.1	145.3

(Table 3 continued on next page)

(Table 3 continued)

Ownership class	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
National Forest	11.6	--	--	--	--	--	--	--	--	--	--	--
Bureau of Land Mgmt.	--	--	--	--	--	--	--	--	--	--	--	--
Miscellaneous federal	3.4	--	--	--	--	--	--	--	--	--	--	--
Indian	--	--	--	--	--	--	--	--	--	--	--	--
State	9.1	--	--	2.9	10.1	9.1	--	--	19.4	--	3.4	--
County and municipal	22.0	--	4.8	--	--	--	--	--	--	--	--	5.9
Forest industry	--	--	--	--	--	--	--	--	--	--	--	--
Farmer	15.8	61.6	10.1	16.4	60.1	20.2	50.1	48.8	54.2	31.0	37.8	11.6
Misc. private-corp.	11.1	20.6	9.7	--	8.5	--	--	--	--	4.9	6.9	4.2
Misc. private-indiv.	91.6	--	52.9	63.4	9.2	30.6	--	4.0	10.1	66.1	23.9	13.8
All owners	164.6	82.2	77.5	82.7	87.9	59.9	50.1	52.8	83.7	102.0	72.0	35.5

Table 4.--Area of commercial forest land by forest type, physiographic class, and ownership class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type and physiographic class	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Jack pine											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	4.2	--	--	--	--	--	--	--	--	--	4.2
Mesic	0.1	0.1	--	--	--	--	--	--	--	--	--
Xeromesic	8.3	0.2	--	--	--	3.3	4.8	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	12.6	0.3	--	--	--	3.3	4.8	--	--	--	4.2
Red pine											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	2.6	--	--	--	--	2.6	--	--	--	--	--
Mesic	20.7	0.1	--	--	--	6.8	3.3	--	--	2.3	8.2
Xeromesic	8.2	3.3	--	--	--	1.6	3.3	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	31.5	3.4	--	--	--	11.0	6.6	--	--	2.3	8.2
White pine											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--	--	--	--
Mesic	19.4	--	--	--	--	--	--	--	4.2	--	15.2
Xeromesic	2.1	--	--	--	--	--	--	--	--	2.1	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	21.5	--	--	--	--	--	--	--	4.2	2.1	15.2
Balsam fir											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	--	--	--	--	--	--	--	--	--	--	--
White spruce											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--	--	--	--
Mesic	7.5	--	--	--	--	--	--	--	--	--	7.5
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	7.5	--	--	--	--	--	--	--	--	--	7.5

(Table 4 continued on next page)

(Table 4 continued)

Forest type and physiographic class	All owners	Ownership class: National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Black spruce											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	6.8	--	--	--	--	0.2	--	--	6.6	--	--
Mesic	6.2	--	--	--	--	--	--	--	6.2	--	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	13.0	--	--	--	--	0.2	--	--	12.8	--	--
Tamarack											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	4.4	--	--	--	--	--	--	--	--	--	4.4
Mesic	--	--	--	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	4.4	--	--	--	--	--	--	--	--	--	4.4
Oak-hickory											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	79.7	--	--	--	--	15.5	--	--	33.3	6.8	24.1
Mesic	548.6	0.3	--	--	--	37.3	10.0	--	236.4	18.4	246.2
Xeromesic	35.3	7.9	--	--	--	6.8	4.2	--	3.3	--	13.1
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	663.6	8.2	--	--	--	59.6	14.2	--	273.0	25.2	283.4
Elm-ash-soft maple											
Hydric	68.8	--	--	--	--	--	--	--	26.4	17.3	25.1
Hydromesic	446.0	0.6	--	4.2	--	18.4	10.7	--	217.9	39.0	155.2
Mesic	33.8	--	--	--	--	3.3	--	--	28.0	2.5	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	548.6	0.6	--	4.2	--	21.7	10.7	--	272.3	58.8	180.3

(Table 4 continued on next page)

(Table 4 continued)

Forest type and physiographic class	All owners	Ownership class: National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Maple-birch											
Hydric	4.2	--	--	--	--	--	--	--	4.2	--	--
Hydromesic	130.9	--	--	--	--	--	11.1	--	70.7	--	49.1
Mesic	740.2	0.1	--	--	--	29.7	1.8	--	380.1	47.6	280.9
Xeromesic	23.8	--	--	3.4	--	3.2	--	--	9.1	--	8.1
Xeric	4.2	--	--	--	--	--	--	--	--	--	4.2
All classes	903.3	0.1	--	3.4	--	32.9	12.9	--	464.1	47.6	342.3
Aspen											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	77.3	--	--	--	--	14.2	3.4	--	46.3	--	13.4
Mesic	106.8	--	--	--	--	4.4	--	--	52.5	--	49.9
Xeromesic	0.3	0.3	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	184.4	0.3	--	--	--	18.6	3.4	--	98.8	--	63.3
Paper birch											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	6.6	--	--	--	--	--	--	--	3.3	--	3.3
Mesic	--	--	--	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	6.6	--	--	--	--	--	--	--	3.3	--	3.3
Exotic											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--	--	--	--
Mesic	21.5	--	--	--	--	--	--	--	1.2	4.2	16.1
Xeromesic	4.8	--	--	--	--	--	--	--	--	--	4.8
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	26.3	--	--	--	--	--	--	--	1.2	4.2	20.9
Nonstocked											
Hydric	--	--	--	--	--	--	--	--	--	--	--
Hydromesic	10.7	--	--	--	--	--	--	--	6.2	--	4.5
Mesic	29.4	--	--	--	--	2.0	--	--	15.0	--	12.4
Xeromesic	--	--	--	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--	--	--	--
All classes	40.1	--	--	--	--	2.0	--	--	21.2	--	16.9
All types											
Hydric	73.0	--	--	--	--	--	--	--	30.6	17.3	25.1
Hydromesic	769.2	0.6	--	4.2	--	50.9	25.2	--	384.3	45.8	258.2
Mesic	1,534.2	0.6	--	--	--	83.5	15.1	--	723.6	75.0	636.4
Xeromesic	82.8	11.7	--	3.4	--	14.9	12.3	--	12.4	2.1	26.0
Xeric	4.2	--	--	--	--	--	--	--	--	--	4.2
All classes	2,463.4	12.9	--	7.6	--	149.3	52.6	--	1,150.9	140.2	949.9

Table 5.--Area of commercial forest land by ownership class and site class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth per acre per year) 225+	165-224	120-164	85-119	50-84	20-49
National Forest	12.9	--	--	--	0.4	6.4	6.1
Bureau of Land Mgmt.	--	--	--	--	--	--	--
Miscellaneous federal	7.6	--	--	--	4.2	--	3.4
Indian	--	--	--	--	--	--	--
State	149.3	--	--	10.9	44.8	73.2	20.4
County and municipal	52.6	--	--	--	24.6	17.8	10.2
Forest industry	--	--	--	--	--	--	--
Farmer	1,150.9	--	--	58.1	431.0	463.2	198.6
Misc. private-corp.	140.2	--	--	7.0	30.6	65.7	36.9
Misc. private-indiv.	949.9	--	--	37.9	303.0	390.8	218.2
All owners	2,463.4	--	--	113.9	838.6	1,017.1	493.8

Table 6.--Area of commercial forest land by ownership class and stand-volume class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1]) Less than 1,500	1,501 to 5,000	5,001+
National Forest	12.9	5.2	7.1	0.6
Bureau of Land Mgmt.	--	--	--	--
Miscellaneous federal	7.6	7.6	--	--
Indian	--	--	--	--
State	149.3	30.7	79.0	39.6
County and municipal	52.6	37.3	3.3	12.0
Forest industry	--	--	--	--
Farmer	1,150.9	451.0	431.9	268.0
Misc. private-corp.	140.2	63.9	33.0	43.3
Misc. private-indiv.	949.9	412.8	321.5	215.6
All owners	2,463.4	1,008.5	875.8	579.1

[1]/International 1/4-inch.

Table 7.--Area of privately owned commercial forest land by ownership class, owner tenure, and size of owner, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Ownership class and owner tenure class	Total	Size of owner (acres)								
		1-4	5-10	11-20	21-50	51-100	101-500	501-2,500	2,501-5,000	5001+
Forest Industry										
1-4 years	--	--	--	--	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--	--	--
20+ years	--	--	--	--	--	--	--	--	--	--
All classes	--	--	--	--	--	--	--	--	--	--
Farmer										
1-4 years	173.0	3.3	14.0	39.4	51.6	36.1	24.4	4.2	--	--
5-9 years	197.5	1.2	37.9	26.5	59.0	58.5	14.4	--	--	--
10-19 years	276.9	2.7	38.8	39.2	57.7	72.1	63.0	3.4	--	--
20+ years	503.5	13.4	42.4	84.9	132.0	115.2	105.8	6.9	2.9	--
All classes	1,150.9	20.6	133.1	190.0	300.3	281.9	207.6	14.5	2.9	--
Misc. priv.-corporation										
1-4 years	22.9	2.7	4.2	--	--	--	6.9	4.2	--	4.9
5-9 years	34.6	--	3.6	--	3.4	13.4	11.9	2.3	--	--
10-19 years	28.9	--	--	4.1	4.2	5.6	7.5	3.3	--	4.2
20+ years	53.8	--	--	--	12.8	21.8	3.4	6.1	--	9.7
All classes	140.2	2.7	7.8	4.1	20.4	40.8	29.7	15.9	--	18.8
Misc. priv.-individual										
1-4 years	226.5	17.1	47.2	37.0	74.5	38.8	11.9	--	--	--
5-9 years	245.0	27.3	50.5	56.2	85.8	11.9	9.1	4.2	--	--
10-19 years	163.3	18.0	19.3	28.1	56.2	23.6	13.2	4.9	--	--
20+ years	315.1	14.4	42.8	79.2	81.8	61.0	35.9	--	--	--
All classes	949.9	76.8	159.8	200.5	298.3	135.3	70.1	9.1	--	--
All private owners										
1-4 years	422.4	23.1	65.4	76.4	126.1	74.9	43.2	8.4	--	4.9
5-9 years	477.1	28.5	92.0	82.7	148.2	83.8	35.4	6.5	--	--
10-19 years	469.1	20.7	58.1	71.4	118.1	101.3	83.7	11.6	--	4.2
20+ years	872.4	27.8	85.2	164.1	226.6	198.0	145.1	13.0	2.9	9.7
All classes	2,241.0	100.1	300.7	394.6	619.0	458.0	307.4	39.5	2.9	18.8

Table 8.--Area of commercial forest land by forest type, stand-size class, and ownership class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type and stand-size class	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Jack pine											
Sawtimber	4.2	--	--	--	--	--	--	--	--	--	4.2
Poletimber	3.3	--	--	--	--	3.3	--	--	--	--	--
Sapling & seedling	5.1	0.3	--	--	--	--	4.8	--	--	--	--
All stands	12.6	0.3	--	--	--	3.3	4.8	--	--	--	4.2
Red pine											
Sawtimber	10.1	0.1	--	--	--	3.4	3.3	--	--	--	3.3
Poletimber	18.2	0.1	--	--	--	7.6	3.3	--	--	2.3	4.9
Sapling & seedling	3.2	3.2	--	--	--	--	--	--	--	--	--
All stands	31.5	3.4	--	--	--	11.0	6.6	--	--	2.3	8.2
White pine											
Sawtimber	10.4	--	--	--	--	--	--	--	4.2	2.1	4.1
Poletimber	6.2	--	--	--	--	--	--	--	--	--	6.2
Sapling & seedling	4.9	--	--	--	--	--	--	--	--	--	4.9
All stands	21.5	--	--	--	--	--	--	--	4.2	2.1	15.2
Balsam fir											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--
White spruce											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	7.5	--	--	--	--	--	--	--	--	--	7.5
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--
All stands	7.5	--	--	--	--	--	--	--	--	--	7.5
Black spruce											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	3.5	--	--	--	--	0.2	--	--	3.3	--	--
Sapling & seedling	9.5	--	--	--	--	--	--	--	9.5	--	--
All stands	13.0	--	--	--	--	0.2	--	--	12.8	--	--

(Table 8 continued on next page)

(Table 8 continued)

Forest type and stand-size class	All owners	Ownership class: National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Tamarack											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	4.4	--	--	--	--	--	--	--	--	--	4.4
All stands	4.4	--	--	--	--	--	--	--	--	--	4.4
Oak-hickory											
Sawtimber	386.4	0.6	--	--	--	36.8	--	--	167.9	18.4	162.7
Poletimber	182.9	6.8	--	--	--	7.5	8.3	--	75.5	--	84.8
Sapling & seedling	94.3	0.8	--	--	--	15.3	5.9	--	29.6	6.8	35.9
All stands	663.6	8.2	--	--	--	59.6	14.2	--	273.0	25.2	283.4
Elm-ash-soft maple											
Sawtimber	206.3	0.2	--	4.2	--	8.4	8.0	--	106.8	18.2	60.5
Poletimber	179.8	0.4	--	--	--	10.0	--	--	89.8	16.6	63.0
Sapling & seedling	162.5	--	--	--	--	3.3	2.7	--	75.7	24.0	56.8
All stands	548.6	0.6	--	4.2	--	21.7	10.7	--	272.3	58.8	180.3
Maple-birch											
Sawtimber	345.6	--	--	--	--	8.5	6.9	--	176.8	22.8	130.6
Poletimber	190.9	0.1	--	--	--	12.5	4.2	--	97.9	--	76.2
Sapling & seedling	366.8	--	--	3.4	--	11.9	1.8	--	189.4	24.8	135.5
All stands	903.3	0.1	--	3.4	--	32.9	12.9	--	464.1	47.6	342.3
Aspen											
Sawtimber	15.9	--	--	--	--	--	--	--	12.5	--	3.4
Poletimber	82.8	0.2	--	--	--	11.7	--	--	50.2	--	20.7
Sapling & seedling	85.7	0.1	--	--	--	6.9	3.4	--	36.1	--	39.2
All stands	184.4	0.3	--	--	--	18.6	3.4	--	98.8	--	63.3
Paper birch											
Sawtimber	--	--	--	--	--	--	--	--	--	--	--
Poletimber	3.3	--	--	--	--	--	--	--	3.3	--	--
Sapling & seedling	3.3	--	--	--	--	--	--	--	--	--	3.3
All stands	6.6	--	--	--	--	--	--	--	3.3	--	3.3
Exotic											
Sawtimber	4.8	--	--	--	--	--	--	--	--	--	4.8
Poletimber	8.3	--	--	--	--	--	--	--	--	--	8.3
Sapling & seedling	13.2	--	--	--	--	--	--	--	1.2	4.2	7.8
All stands	26.3	--	--	--	--	--	--	--	1.2	4.2	20.9
Nonstocked	40.1	--	--	--	--	2.0	--	--	21.2	--	16.9
All types											
Sawtimber	983.7	0.9	--	4.2	--	57.1	18.2	--	468.2	61.5	373.6
Poletimber	686.7	7.6	--	--	--	52.8	15.8	--	320.0	18.9	271.6
Sapling & seedling	752.9	4.4	--	3.4	--	37.4	18.6	--	341.5	59.8	287.8
Nonstocked	40.1	--	--	--	--	2.0	--	--	21.2	--	16.9
All stands	2,463.4	12.9	--	7.6	--	149.3	52.6	--	1,150.9	140.2	949.9

Table 9.--Area of commercial forest land by forest type and county, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type	All counties	County										
		Allegan	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
Jack pine	12.6	3.3	--	--	--	--	--	--	--	--	--	--
Red pine	31.5	4.8	--	--	--	--	--	--	--	--	--	--
White pine	21.5	7.5	--	--	--	--	--	--	--	--	2.9	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	7.5	--	2.6	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	13.0	--	--	--	--	--	--	--	--	--	--	--
Tamarack	4.4	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	663.6	49.8	46.8	4.2	6.7	17.2	10.2	14.9	3.4	7.4	11.4	5.5
Elm-ash-soft maple	548.6	26.5	8.3	18.6	25.0	28.5	32.4	8.2	21.3	7.8	1.2	13.9
Maple-birch	903.3	36.3	50.1	43.3	11.2	25.5	11.4	7.4	20.8	24.6	11.9	19.7
Aspen	184.4	4.4	--	--	--	4.9	--	--	--	4.2	--	--
Paper birch	6.6	--	--	--	--	--	--	--	--	--	--	--
Exotic	26.3	4.8	3.4	--	1.2	--	--	--	--	--	--	--
Nonstocked	40.1	--	--	--	--	--	--	--	--	--	--	5.9
All types	2,463.4	137.4	111.2	66.1	44.1	76.1	54.0	30.5	45.5	44.0	27.4	45.0

(Table 9 continued)

(Table 9 continued)

Forest type	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	1.6	--	2.6	--	3.3	--	--	3.7
White pine	--	--	--	--	2.1	4.8	--	--	--	--	--	4.2
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	4.9	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	3.3	--	--	--	--	0.2
Tamarack	--	--	--	--	--	--	--	--	--	--	--	4.4
Oak-hickory	--	3.4	6.7	35.8	16.8	36.4	17.2	8.9	43.0	--	13.5	38.9
Elm-ash-soft maple	19.3	5.4	8.6	11.8	10.0	19.2	27.6	6.5	14.9	17.1	5.1	32.6
Maple-birch	5.8	28.2	17.6	33.2	31.2	43.8	27.0	30.3	7.9	27.9	10.3	33.5
Aspen	26.8	5.1	4.3	--	--	14.1	--	--	--	--	4.2	23.1
Paper birch	--	--	--	--	--	--	3.3	--	--	--	--	--
Exotic	--	--	--	2.6	--	4.3	--	--	--	--	--	--
Nonstocked	4.2	--	--	--	--	--	--	2.0	--	--	2.0	4.7
All types	56.1	42.1	37.2	83.4	66.6	122.6	81.0	47.7	69.1	45.0	35.1	145.3

(Table 9 continued on next page)

(Table 9 continued)

Forest type	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
Jack pine	4.5	--	4.8	--	--	--	--	--	--	--	--	--
Red pine	9.8	--	5.7	--	--	--	--	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	9.5	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	74.3	25.5	19.7	26.1	12.6	23.6	--	19.1	--	13.7	37.9	13.0
Elm-ash-soft maple	10.4	23.2	14.1	19.6	9.5	3.3	3.3	18.5	23.6	25.3	17.0	11.0
Maple-birch	44.7	28.8	21.4	30.2	53.1	26.8	24.3	15.2	17.6	58.2	12.6	11.5
Aspen	15.1	--	4.4	6.8	12.7	4.4	18.0	--	29.7	2.2	--	--
Paper birch	--	--	--	--	--	--	--	--	3.3	--	--	--
Exotic	--	--	7.4	--	--	--	--	--	--	2.6	--	--
Nonstocked	5.8	4.7	--	--	--	1.8	4.5	--	--	--	4.5	--
All types	164.6	82.2	77.5	82.7	87.9	59.9	50.1	52.8	83.7	102.0	72.0	35.5

Table 10.--Area of commercial forest land by county and stand-size class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

County	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Allegan	137.4	57.0	41.8	38.6	--
Barry	111.2	62.0	24.4	24.8	--
Berrien	66.1	42.0	12.5	11.6	--
Branch	44.1	23.5	11.2	9.4	--
Calhoun	76.1	40.5	23.0	12.6	--
Cass	54.0	24.6	20.6	8.8	--
Clinton	30.5	10.7	8.4	11.4	--
Eaton	45.5	15.5	18.9	11.1	--
Genesee	44.0	12.3	11.7	20.0	--
Gratiot	27.4	13.7	6.2	7.5	--
Hillsdale	45.0	12.1	9.7	17.3	5.9
Huron	56.1	14.0	19.4	18.5	4.2
Ingham	42.1	27.0	6.6	8.5	--
Ionia	37.2	15.4	4.4	17.4	--
Jackson	83.4	41.8	20.7	20.9	--
Kalamazoo	66.6	19.8	15.5	31.3	--
Kent	122.6	26.8	52.1	43.7	--
Lapeer	81.0	36.8	19.1	25.1	--
Lenawee	47.7	20.1	10.1	15.5	2.0
Livingston	69.1	45.4	16.7	7.0	--
Macomb	45.0	13.5	--	31.5	--
Monroe	35.1	17.6	5.1	10.4	2.0
Montcalm	145.3	36.9	67.1	36.6	4.7
Muskegon	164.6	62.7	49.8	46.2	5.9
Oakland	82.2	26.9	17.8	32.9	4.6
Ottawa	77.5	39.4	11.2	26.9	--
Saginaw	82.7	19.3	21.9	41.5	--
St. Clair	87.9	41.4	12.5	34.0	--
St. Joseph	59.9	27.0	7.4	23.7	1.8
Sanilac	50.1	4.2	9.4	32.0	4.5
Shiawassee	52.8	25.5	17.4	9.9	--
Tuscola	83.7	11.8	56.6	15.3	--
Van Buren	102.0	30.5	35.5	36.0	--
Washtenaw	72.0	41.6	17.8	8.1	4.5
Wayne	35.5	24.4	4.2	6.9	--
All counties	2,463.4	983.7	686.7	752.9	40.1

Table 11.--Area of commercial forest land by forest type, stand-size class, and site class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
Jack pine							
Sawtimber	4.2	--	--	--	--	4.2	--
Poletimber	3.3	--	--	--	--	3.3	--
Sapling & seedling	5.1	--	--	--	--	4.8	0.3
All stands	12.6	--	--	--	--	12.3	0.3
Red pine							
Sawtimber	10.1	--	--	6.6	3.4	0.1	--
Poletimber	18.2	--	--	12.5	3.4	2.3	--
Sapling & seedling	3.2	--	--	--	--	2.7	0.5
All stands	31.5	--	--	19.1	6.8	5.1	0.5
White pine							
Sawtimber	10.4	--	--	6.2	4.2	--	--
Poletimber	6.2	--	--	--	--	6.2	--
Sapling & seedling	4.9	--	--	--	--	4.9	--
All stands	21.5	--	--	6.2	4.2	11.1	--
Balsam fir							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
White spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	7.5	--	--	--	--	7.5	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	7.5	--	--	--	--	7.5	--
Black spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Northern white-cedar							
Sawtimber	--	--	--	--	--	--	--
Poletimber	3.5	--	--	--	--	0.2	3.3
Sapling & seedling	9.5	--	--	--	--	2.9	6.6
All stands	13.0	--	--	--	--	3.1	9.9

(Table 11 continued on next page)

(Table 11 continued)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
Tamarack							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	4.4	--	--	--	--	--	4.4
All stands	4.4	--	--	--	--	--	4.4
Oak-hickory							
Sawtimber	386.4	--	--	19.2	136.4	188.1	42.7
Poletimber	182.9	--	--	--	57.5	97.0	28.4
Sapling & seedling	94.3	--	--	--	19.1	58.9	16.3
All stands	663.6	--	--	19.2	213.0	344.0	87.4
Elm-ash-soft maple							
Sawtimber	206.3	--	--	--	100.1	65.6	40.6
Poletimber	179.8	--	--	--	77.8	36.3	65.7
Sapling & seedling	162.5	--	--	--	20.3	57.4	84.8
All stands	548.6	--	--	--	198.2	159.3	191.1
Maple-birch							
Sawtimber	345.6	--	--	34.8	133.2	152.9	24.7
Poletimber	190.9	--	--	19.3	93.1	61.6	16.9
Sapling & seedling	366.8	--	--	11.1	73.9	185.3	96.5
All stands	903.3	--	--	65.2	300.2	399.8	138.1
Aspen							
Sawtimber	15.9	--	--	--	15.9	--	--
Poletimber	82.8	--	--	--	52.6	23.4	6.8
Sapling & seedling	85.7	--	--	4.2	37.4	25.6	18.5
All stands	184.4	--	--	4.2	105.9	49.0	25.3
Paper birch							
Sawtimber	--	--	--	--	--	--	--
Poletimber	3.3	--	--	--	--	3.3	--
Sapling & seedling	3.3	--	--	--	--	--	3.3
All stands	6.6	--	--	--	--	3.3	3.3
Exotic							
Sawtimber	4.8	--	--	--	--	4.8	--
Poletimber	8.3	--	--	--	3.5	--	4.8
Sapling & seedling	13.2	--	--	--	2.6	6.4	4.2
All stands	26.3	--	--	--	6.1	11.2	9.0
Nonstocked	40.1	--	--	--	4.2	11.4	24.5
All types							
Sawtimber	983.7	--	--	66.8	393.2	415.7	108.0
Poletimber	686.7	--	--	31.8	287.9	241.1	125.9
Sapling & seedling	752.9	--	--	15.3	153.3	348.9	235.4
Nonstocked	40.1	--	--	--	4.2	11.4	24.5
All stands	2,463.4	--	--	113.9	838.6	1,017.1	493.8

Table 12.--Area of commercial forest land by forest type and stand-age class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type	All ages	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	12.6	4.9	--	0.1	0.1	3.3	--	4.2	--	--	--	--	--	--
Red pine	31.5	1.0	6.5	6.7	5.8	11.5	--	--	--	--	--	--	--	--
White pine	21.5	--	--	7.7	--	5.4	--	4.2	4.2	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	7.5	--	--	--	7.5	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	13.0	2.9	--	6.6	--	--	--	--	3.3	--	--	0.2	--	--
Tamarack	4.4	4.4	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	663.6	37.9	56.6	5.3	49.6	73.9	52.1	33.6	116.1	85.5	30.7	89.9	23.5	8.9
Elm-ash-soft maple	548.6	67.1	79.4	53.7	65.7	39.7	61.3	31.4	37.5	41.7	16.0	46.6	8.5	--
Maple-birch	903.3	186.2	157.8	50.3	73.9	59.5	44.0	79.9	56.7	64.3	54.9	57.0	18.8	--
Aspen	184.4	41.5	44.2	13.9	36.0	16.8	11.2	15.9	4.9	--	--	--	--	--
Paper birch	6.6	--	3.3	--	3.3	--	--	--	--	--	--	--	--	--
Exotic	26.3	3.8	6.8	7.5	3.4	--	4.8	--	--	--	--	--	--	--
Nonstocked	40.1	19.7	16.6	3.8	--	--	--	--	--	--	--	--	--	--
All types	2,463.4	369.4	371.2	155.6	245.3	210.1	173.4	169.2	222.7	191.5	101.6	193.7	50.8	8.9

Table 13.--Area of commercial forest land by forest type and site-index class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type	All classes	Site-index class (feet)								
		11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Jack pine	12.6	--	--	0.2	0.1	--	12.3	--	--	--
Red pine	31.5	--	--	--	2.7	2.9	0.2	6.7	19.0	--
White pine	21.5	--	--	--	--	11.1	--	8.3	2.1	--
Balsam fir	--	--	--	--	--	--	--	--	--	--
White spruce	7.5	--	--	--	--	7.5	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	13.0	--	6.6	3.3	--	0.2	2.9	--	--	--
Tamarack	4.4	--	4.4	--	--	--	--	--	--	--
Oak-hickory	663.6	--	--	13.1	35.3	114.3	194.7	176.7	101.1	28.4
Elm-ash-soft maple	548.6	--	--	24.1	18.5	71.2	138.5	98.0	101.9	96.4
Maple-birch	903.3	--	--	9.2	42.2	86.7	206.0	277.6	189.0	92.6
Aspen	184.4	--	--	--	--	33.8	40.5	28.4	77.5	4.2
Paper birch	6.6	--	--	--	--	3.3	--	3.3	--	--
Exotic	26.3	--	--	4.2	10.0	6.0	6.1	--	--	--
Nonstocked	40.1	--	--	--	20.2	10.1	1.8	3.8	4.2	--
All types	2,463.4	--	11.0	54.1	129.0	347.1	603.0	602.8	494.8	221.6

Table 14.--Area of commercial forest land by forest type, stand-size class, and basal-area class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	4.2	--	--	--	--	--	--	--	--	4.2	--	--	--	--	--
Poletimber	3.3	--	--	--	--	--	--	--	--	--	--	3.3	--	--	--
Sapling & seedling	5.1	--	--	--	0.1	0.1	--	--	4.8	--	--	--	0.1	--	--
All stands	12.6	--	--	--	0.1	0.1	--	--	4.8	4.2	--	3.3	0.1	--	--
Red pine															
Sawtimber	10.1	--	--	--	--	--	--	--	--	3.3	--	0.1	6.7	--	--
Poletimber	18.2	--	--	--	--	--	--	4.8	1.6	0.1	--	9.4	2.3	--	--
Sapling & seedling	3.2	2.1	--	--	--	0.1	--	0.5	--	0.5	--	--	--	--	--
All stands	31.5	2.1	--	--	--	0.1	--	5.3	1.6	3.9	--	9.5	9.0	--	--
White pine															
Sawtimber	10.4	--	--	--	--	--	--	--	--	--	--	2.1	--	8.3	--
Poletimber	6.2	--	--	--	--	--	--	2.9	--	--	--	--	3.3	--	--
Sapling & seedling	4.9	--	--	4.9	--	--	--	--	--	--	--	--	--	--	--
All stands	21.5	--	--	4.9	--	--	--	2.9	--	--	--	2.1	3.3	8.3	--
Balsam fir															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	7.5	--	--	--	--	--	--	2.6	--	4.9	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	7.5	--	--	--	--	--	--	2.6	--	4.9	--	--	--	--	--
Black spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	3.5	--	--	--	--	--	--	3.3	--	--	--	--	0.2	--	--
Sapling & seedling	9.5	2.9	3.3	--	--	--	--	--	3.3	--	--	--	--	--	--
All stands	13.0	2.9	3.3	--	--	--	--	3.3	3.3	--	--	--	0.2	--	--

(Table 14 continued on next page)

(Table 14 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	4.4	--	--	--	4.4	--	--	--	--	--	--	--	--	--	--
All stands	4.4	--	--	--	4.4	--	--	--	--	--	--	--	--	--	--
Oak-hickory															
Sawtimber	386.4	--	--	5.5	5.0	13.3	42.6	30.9	48.6	42.3	27.8	80.6	79.8	10.0	--
Poletimber	182.9	--	--	--	--	8.3	30.1	28.2	33.6	21.7	23.2	24.2	9.4	--	4.2
Sapling & seedling	94.3	5.8	3.1	2.8	27.7	33.1	7.6	14.2	--	--	--	--	--	--	--
All stands	663.6	5.8	3.1	8.3	32.7	54.7	80.3	73.3	82.2	64.0	51.0	104.8	89.2	10.0	4.2
Elm-ash-soft maple															
Sawtimber	206.3	--	--	7.5	19.8	19.3	10.7	19.1	38.9	21.5	6.7	28.7	29.9	4.2	--
Poletimber	179.8	--	3.4	8.6	16.1	26.4	3.4	26.9	38.2	8.8	36.1	11.7	0.2	--	--
Sapling & seedling	162.5	22.2	14.0	8.9	57.9	15.8	19.9	10.9	12.9	--	--	--	--	--	--
All stands	548.6	22.2	17.4	25.0	93.8	61.5	34.0	56.9	90.0	30.3	42.8	40.4	30.1	4.2	--
Maple-birch															
Sawtimber	345.6	--	--	--	5.2	22.9	14.6	50.2	50.8	35.5	61.0	34.4	58.2	12.8	--
Poletimber	190.9	--	--	6.0	9.1	--	3.6	32.7	38.5	23.4	31.4	32.9	13.3	--	--
Sapling & seedling	366.8	30.3	70.9	52.3	53.2	41.2	17.4	48.5	18.0	20.8	8.2	3.4	2.6	--	--
All stands	903.3	30.3	70.9	58.3	67.5	64.1	35.6	131.4	107.3	79.7	100.6	70.7	74.1	12.8	--
Aspen															
Sawtimber	15.9	--	--	--	--	--	--	--	--	--	8.5	--	7.4	--	--
Poletimber	82.8	--	--	--	22.4	16.6	18.5	4.2	16.8	0.2	--	--	4.1	--	--
Sapling & seedling	85.7	8.1	5.5	11.8	5.9	26.2	4.3	6.1	3.3	3.4	11.1	--	--	--	--
All stands	184.4	8.1	5.5	11.8	28.3	42.8	22.8	10.3	20.1	3.6	19.6	--	11.5	--	--
Paper birch															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	3.3	--	--	--	--	--	--	--	3.3	--	--	--	--	--	--
Sapling & seedling	3.3	--	--	--	--	--	3.3	--	--	--	--	--	--	--	--
All stands	6.6	--	--	--	--	--	3.3	--	3.3	--	--	--	--	--	--
Exotic															
Sawtimber	4.8	--	--	--	--	--	--	--	--	--	--	4.8	--	--	--
Poletimber	8.3	--	--	--	--	--	3.5	--	--	--	--	--	4.8	--	--
Sapling & seedling	13.2	--	--	--	1.2	--	--	6.8	5.2	--	--	--	--	--	--
All stands	26.3	--	--	--	1.2	--	3.5	6.8	5.2	--	--	4.8	4.8	--	--
Nonstocked	40.1	26.9	11.4	1.8	--	--	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	983.7	--	--	13.0	30.0	55.5	67.9	100.2	138.3	106.8	104.0	150.7	182.0	35.3	--
Poletimber	686.7	--	3.4	14.6	47.6	51.3	59.1	105.6	132.0	59.1	90.7	81.5	37.6	--	4.2
Sapling & seedling	752.9	71.4	96.8	80.7	150.4	116.5	52.5	87.0	47.5	24.7	19.3	3.4	2.7	--	--
Nonstocked	40.1	26.9	11.4	1.8	--	--	--	--	--	--	--	--	--	--	--
All stands	2,463.4	98.3	111.6	110.1	228.0	223.3	179.5	292.8	317.8	190.6	214.0	235.6	222.3	35.3	4.2

Table 15.--Area of commercial forest land by stocking class of growing-stock trees and stand-size class, Southern Lower Peninsula, Michigan, 1980

Stocking class (percent)	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Less than 16.7	40.1	--	--	--	40.1
16.7 to 60.9	372.7	98.0	90.8	183.9	--
61.0 to 100.9	1,003.4	360.3	308.7	334.4	--
101.0 to 133.9	922.7	457.5	267.7	197.5	--
134.0+	124.3	67.8	19.4	37.2	--
All classes	2,463.4	983.5	686.7	753.1	40.1

Table 16.--Area of commercial forest land by stocking class based on selected stand components, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Stocking class (percent)	Stocking classified in terms of				
	All live trees	Growing-stock trees	Desirable trees	Acceptable trees	Rough and rotten trees
0-10	4.7	23.3	2,391.9	23.3	1,623.4
11-20	13.2	39.7	50.2	39.7	515.5
21-30	27.8	52.8	13.5	52.8	164.3
31-40	40.8	63.1	4.4	63.1	70.0
41-50	82.6	108.8	3.4	117.9	43.3
51-60	87.3	125.3	--	127.0	29.4
61-70	130.0	183.4	--	198.6	10.9
71-80	105.0	252.8	--	261.4	0.1
81-90	293.8	266.2	--	254.7	0.2
91-100	302.4	301.0	--	346.5	--
101-110	345.7	367.7	--	366.1	1.8
111-120	403.7	295.6	--	288.0	--
121-130	295.6	208.0	--	183.8	1.8
131-140	222.4	127.5	--	92.3	2.7
141-150	93.0	37.2	--	37.4	--
151-160	11.2	11.0	--	10.8	--
161+	4.2	--	--	--	--
Total	2,463.4	2,463.4	2,463.4	2,463.4	2,463.4

Table 17.--Area of noncommercial forest land by ownership class, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Ownership class	All areas	Productive-reserved area	Unproductive areas
National Forest	--	--	--
Bureau of Land Management	--	--	--
Indian	--	--	--
Miscellaneous federal	--	--	--
State	66.4	66.4	--
County and municipal	10.4	10.4	--
Forest industry	--	--	--
Farmer	4.3	--	4.3
Misc. private-corp.	4.0	4.0	--
Misc. private-indiv.	0.6	--	0.6
Total	85.7	80.8	4.9

Table 18.--Area of noncommercial forest land by forest type, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type	All areas	Productive-reserved area	Unproductive areas
Jack pine	0.3	0.3	--
Red pine	1.4	1.4	--
White pine	0.4	0.4	--
Balsam fir	--	--	--
White spruce	--	--	--
Black spruce	--	--	--
Northern white-cedar	--	--	--
Tamarack	0.6	--	0.6
Oak-hickory	38.0	38.0	--
Elm-ash-soft maple	26.4	26.4	--
Maple-birch	8.2	8.2	--
Aspen	2.1	2.1	--
Paper birch	--	--	--
Exotic	4.0	4.0	--
Nonstocked	4.3	--	4.3
All types	85.7	80.8	4.9

Table 19.--Area of nonforest land with trees by forest type and land use, Southern Lower Peninsula, Michigan, 1980

(In thousand acres)

Forest type	All uses	Land use							
		Cropland	Improved pasture	Wooded strips	Idle farmland	Marsh	Wind-breaks	Urban and other windbreaks	Wooded pasture
Jack pine	--	--	--	--	--	--	--	--	--
Red pine	4.8	--	--	4.8	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--
Oak-hickory	58.3	17.3	--	39.0	2.0	--	--	--	--
Elm-ash-soft maple	182.2	12.3	--	93.1	6.7	50.8	12.1	--	7.2
Maple-birch	65.1	9.0	--	37.5	--	4.2	12.2	--	2.2
Aspen	35.4	4.6	0.2	8.2	--	18.4	4.0	--	--
Paper birch	4.5	--	4.5	--	--	--	--	--	--
Exotic	--	--	--	--	--	--	--	--	--
Nonstocked	--	--	--	--	--	--	--	--	--
All types	350.3	43.2	4.7	182.6	8.7	73.4	28.3	--	9.4

Table 20.--Number of all live trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS															
White pine	19,534	9,018	3,521	2,092	2,102	1,479	495	393	176	97	66	35	50	10	--
Red pine	12,622	637	2,223	4,614	3,254	1,382	439	71	1	1	--	--	--	--	--
Jack pine	5,804	1,046	2,093	1,552	578	386	113	36	--	--	--	--	--	--	--
White spruce	5,088	2,647	1,581	800	27	33	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	34	13	--	--	--	21	--	--	--	--	--	--	--	--	--
Hemlock	2,018	722	699	236	158	61	71	26	--	--	19	5	19	2	--
Tamarack	3,615	1,739	1,094	550	132	21	71	--	--	8	--	--	--	--	--
Northern white-cedar	5,293	2,691	1,117	1,086	242	106	38	13	--	--	--	--	--	--	--
Other softwoods	25,090	6,805	10,592	4,964	1,613	720	291	105	--	--	--	--	--	--	--
Total	79,098	25,318	22,920	15,894	8,106	4,209	1,518	644	177	106	85	40	69	12	--
HARDWOODS															
Select white oaks	62,468	23,445	12,963	7,856	5,960	4,142	2,566	1,876	1,487	856	521	265	386	131	14
Select red oaks	57,374	25,842	5,663	7,550	4,963	4,377	3,301	2,245	1,479	776	508	291	329	50	--
Other red oaks	19,801	6,531	4,193	2,688	1,572	1,572	1,470	769	460	281	103	66	76	20	--
Hickory	43,357	25,914	5,970	3,479	3,086	2,355	1,299	611	296	187	65	50	34	5	6
Yellow birch	6,269	3,357	1,772	274	456	151	95	105	41	7	6	5	--	--	--
Hard maple	63,590	43,163	11,158	3,277	1,824	1,558	708	684	577	242	179	82	103	24	11
Soft maple	184,795	111,720	31,842	18,024	9,483	5,581	2,906	1,920	1,239	714	466	334	394	131	41
Beech	9,151	5,048	871	898	812	382	250	213	237	129	106	82	112	11	--
Ash	178,353	110,166	39,473	14,051	6,402	3,842	1,814	1,037	720	376	210	113	125	21	3
Balsam poplar	1,516	--	288	307	556	140	101	54	41	15	0	7	7	--	--
Cottonwood	10,673	3,880	2,785	1,231	673	932	350	255	257	85	68	61	66	26	4
Bigtooth aspen	23,742	9,805	3,562	4,403	2,555	1,995	1,061	288	60	--	13	--	--	--	--
Quaking aspen	59,835	31,567	12,438	8,803	4,557	1,436	733	218	79	--	4	--	--	--	--
Basswood	34,035	21,044	4,498	3,031	2,324	1,127	718	529	340	191	103	64	59	3	4
Yellow-poplar	2,549	1,341	117	317	250	107	101	128	76	22	61	19	10	--	--
Black walnut	3,155	--	595	898	466	469	256	207	165	45	21	18	10	5	--
Black cherry	86,213	60,022	11,049	6,217	4,001	2,204	1,388	684	313	185	75	56	14	5	--
Butternut	3,593	2,253	703	239	219	83	33	33	10	7	--	5	8	--	--
Elm	145,960	101,660	28,205	10,610	3,576	1,105	494	172	91	28	15	--	4	--	--
Paper birch	14,542	7,101	3,366	2,477	958	510	64	38	13	8	7	--	--	--	--
Other hardwoods	91,805	60,531	18,371	7,398	2,493	1,533	540	387	210	72	90	38	100	37	5
Noncommercial species	160,185	130,480	24,704	3,342	1,123	333	99	69	17	7	6	5	--	--	--
Total	1,262,961	784,870	224,586	107,370	58,309	35,934	20,347	12,522	8,208	4,233	2,627	1,561	1,837	469	88
All species	1,342,059	810,188	247,506	123,264	66,415	40,143	21,865	13,166	8,385	4,339	2,712	1,601	1,906	481	88

Table 21.--Number of growing-stock trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS															
White pine	19,105	9,017	3,521	1,835	2,032	1,427	472	393	161	97	66	30	44	10	--
Red pine	11,854	637	2,223	4,157	3,006	1,335	423	71	1	1	--	--	--	--	--
Jack pine	5,768	1,039	2,087	1,529	578	386	113	36	--	--	--	--	--	--	--
White spruce	5,072	2,647	1,581	800	27	17	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	34	13	--	--	--	21	--	--	--	--	--	--	--	--	--
Hemlock	2,018	722	699	236	158	61	71	26	--	--	19	5	19	2	--
Tamarack	3,607	1,739	1,094	550	132	21	71	--	--	--	--	--	--	--	--
Northern white-cedar	4,372	2,031	1,117	963	153	57	38	13	--	--	--	--	--	--	--
Other softwoods	21,998	6,805	8,670	4,225	1,304	673	216	105	--	--	--	--	--	--	--
Total	73,828	24,650	20,992	14,295	7,390	3,998	1,404	644	162	98	85	35	63	12	--
HARDWOODS															
Select white oaks	60,307	22,982	12,432	7,567	5,602	3,959	2,423	1,797	1,473	848	507	254	345	108	10
Select red oaks	56,172	25,281	5,663	7,497	4,897	4,141	3,246	2,176	1,438	776	474	264	280	39	--
Other red oaks	19,280	6,528	4,160	2,527	1,437	1,528	1,382	750	450	272	101	62	70	13	--
Hickory	43,059	25,915	5,970	3,430	3,086	2,235	1,224	587	285	179	65	44	28	5	6
Yellow birch	5,675	3,018	1,772	268	339	96	65	78	21	7	6	5	--	--	--
Hard maple	62,771	43,161	10,796	3,159	1,752	1,479	664	622	567	227	158	82	84	18	2
Soft maple	180,884	110,493	31,833	16,997	8,875	5,297	2,688	1,761	1,153	639	395	287	343	112	11
Beech	8,359	5,050	510	751	682	382	214	177	225	114	100	77	69	8	--
Ash	174,767	108,935	38,449	13,583	5,974	3,651	1,749	960	698	345	187	103	111	21	1
Balsam poplar	1,478	--	288	307	527	140	101	54	32	15	--	7	7	--	--
Cottonwood	10,543	3,881	2,785	1,155	673	880	350	255	257	85	68	61	66	26	1
Bigtooth aspen	22,852	9,803	3,127	4,207	2,375	1,940	1,039	288	60	--	13	--	--	--	--
Quaking aspen	55,139	29,415	11,002	8,272	4,178	1,297	674	218	79	--	4	--	--	--	--
Basswood	33,047	20,711	4,495	2,878	2,125	1,043	610	473	330	179	83	57	56	3	4
Yellow-poplar	2,549	1,341	117	317	250	107	101	128	76	22	61	19	10	--	--
Black walnut	3,095	--	595	898	466	443	227	207	165	45	21	18	10	--	--
Black cherry	82,243	58,319	10,301	5,710	3,856	1,742	1,122	614	271	178	75	44	9	2	--
Butternut	3,441	2,251	703	239	119	46	33	33	10	7	--	--	--	--	--
Elm	144,349	101,659	27,733	10,100	3,288	887	409	154	82	18	15	--	4	--	--
Paper birch	14,090	7,100	3,037	2,476	871	476	64	38	13	8	7	--	--	--	--
Other hardwoods	85,115	57,952	16,948	5,934	1,921	1,178	426	327	179	29	80	38	76	24	3
Total	1,069,215	643,795	192,716	98,272	53,293	32,947	18,811	11,697	7,864	3,993	2,420	1,422	1,568	379	38
All species	1,143,043	668,445	213,708	112,567	60,683	36,945	20,215	12,341	8,026	4,091	2,505	1,457	1,631	391	38

Table 22.--Number of short-log trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
White pine	75	52	23	--	--	--	--	--	--	--	--
Red pine	25	25	--	--	--	--	--	--	--	--	--
Jack pine	--	--	--	--	--	--	--	--	--	--	--
White spruce	16	16	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	26	26	--	--	--	--	--	--	--	--	--
Other softwoods	72	47	25	--	--	--	--	--	--	--	--
Total	214	166	48	--	--	--	--	--	--	--	--
HARDWOODS											
Select white oaks	161	--	78	61	--	--	7	--	12	3	--
Select red oaks	83	--	17	13	9	--	16	15	13	--	--
Other red oaks	85	--	63	2	1	8	2	--	3	6	--
Hickory	62	--	24	13	11	8	--	6	--	--	--
Yellow birch	43	--	30	13	--	--	--	--	--	--	--
Hard maple	49	--	--	13	10	7	11	--	6	--	2
Soft maple	154	--	41	15	52	7	8	5	14	8	4
Beech	65	--	18	24	--	--	6	5	10	2	--
Ash	145	--	40	61	--	17	6	10	11	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	--	--	--
Basswood	10	--	--	--	10	--	--	--	--	--	--
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--
Black walnut	3	--	--	--	--	--	--	--	--	3	--
Black cherry	190	--	138	16	29	7	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--
Elm	20	--	13	7	--	--	--	--	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	101	--	46	43	7	--	--	--	--	3	2
Total	1,171	--	508	281	129	54	56	41	69	25	8
All species	1,385	166	556	281	129	54	56	41	69	25	8

Table 23.--Net volume of growing stock on commercial forest land by species group, Southern Lower Peninsula, Michigan, 1966 and 1980

(In million cubic feet)

Species group	1966[1/]	1980
SOFTWOODS		
White pine	43.1	67.0
Red pine	18.3	48.8
Jack pine	3.0	13.3
White spruce	--	1.7
Black spruce	--	--
Balsam fir	--	0.2
Hemlock	9.6	6.8
Tamarack	10.1	4.0
Northern white-cedar	7.5	3.9
Other softwoods	5.8	25.9
Total	97.4	171.6
HARDWOODS		
Select white oak	228.7	309.3
Select red oak	218.6	338.0
Other red oak	160.6	110.9
Hickory	98.8	103.6
Yellow birch	7.2	7.6
Hard maple	120.0	114.7
Soft maple	274.4	398.4
Beech	55.2	47.4
Ash	160.7	227.9
Balsam poplar	6.4	10.1
Cottonwood	47.0	59.9
Bigtooth aspen	67.3	78.7
Quaking aspen	81.8	76.2
Basswood	53.3	83.6
Yellow-poplar	8.0	19.4
Black walnut	3.2	26.6
Black cherry	51.2	116.4
Elm	149.6	58.8
Paper birch	18.1	20.1
Other hardwoods	37.3	80.2
Total	1,847.4	2,287.8
All species	1,944.8	2,459.4

[1/] Figures have been adjusted from those published after the 1966 survey to conform to 1980 areas because of changes in survey procedures and definitions.

Table 24.--Net volume of all live trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
White pine	68,627	4,644	10,129	13,319	7,364	9,254	5,747	4,281	3,914	2,586	5,040	2,349	--
Red pine	50,839	12,111	18,049	13,315	5,893	1,440	15	16	--	--	--	--	--
Jack pine	13,304	4,471	2,968	3,558	1,663	644	--	--	--	--	--	--	--
White spruce	1,816	1,426	166	224	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	185	--	--	185	--	--	--	--	--	--	--	--	--
Hemlock	6,810	285	686	533	1,013	563	5	--	1,168	341	1,787	429	--
Tamarack	4,049	1,835	758	275	1,142	--	--	39	--	--	--	--	--
Northern white-cedar	4,616	2,471	973	615	352	204	1	--	--	--	--	--	--
Other softwoods	28,549	9,951	6,782	6,193	3,331	2,292	--	--	--	--	--	--	--
Total	178,795	37,194	40,511	38,217	20,758	14,397	5,768	4,336	5,082	2,927	6,827	2,778	--
HARDWOODS													
Select white oaks	321,737	21,593	32,555	39,208	36,450	37,574	40,909	29,937	23,254	14,226	27,401	15,405	3,225
Select red oaks	347,781	17,229	27,678	43,676	54,095	51,094	45,679	32,417	26,287	18,102	25,779	5,745	--
Other red oaks	114,706	6,589	9,120	15,181	22,630	17,260	14,759	11,261	5,458	3,998	6,248	2,202	--
Hickory	106,714	8,177	16,993	24,149	20,239	14,096	8,816	6,494	2,885	2,325	1,680	396	464
Yellow birch	9,092	728	2,113	1,072	1,411	2,004	908	325	279	252	--	--	--
Hard maple	121,428	9,755	11,168	16,527	11,572	15,579	18,670	9,761	8,684	5,344	8,430	3,156	2,782
Soft maple	427,017	48,743	56,542	59,529	48,752	45,400	39,315	29,206	23,814	19,734	31,627	16,594	7,761
Beech	53,084	2,402	4,493	4,281	4,162	4,532	7,088	5,419	5,596	4,963	8,915	1,233	--
Ash	237,444	39,004	37,558	39,323	29,154	22,938	23,037	15,214	11,295	6,532	10,495	2,455	439
Balsam poplar	10,222	806	2,923	1,396	1,383	1,057	1,106	505	--	455	591	--	--
Cottonwood	60,649	2,968	3,499	8,173	5,444	5,855	9,023	3,550	3,970	4,702	7,329	5,204	932
Bigtooth aspen	80,346	12,730	15,433	23,336	18,896	7,056	2,229	3	663	--	--	--	--
Quaking aspen	79,264	20,491	25,426	14,671	10,854	5,232	2,372	--	218	--	--	--	--
Basswood	88,591	7,901	11,996	10,812	10,987	12,856	10,869	7,705	4,810	3,722	4,960	331	1,642
Yellow-poplar	19,425	1,065	1,337	1,295	1,950	2,982	3,209	879	4,016	1,757	935	--	--
Black walnut	27,646	2,491	2,776	4,863	3,590	4,380	4,423	1,633	1,052	1,228	619	591	--
Black cherry	126,713	18,593	25,460	21,991	21,808	15,685	9,244	6,933	3,234	2,450	802	513	--
Butternut	4,566	639	1,002	892	495	677	180	170	--	177	334	--	--
Elm	64,172	23,733	17,015	9,338	6,230	3,402	2,468	949	708	--	329	--	--
Paper birch	20,723	7,180	5,740	5,084	1,003	786	373	276	281	--	--	--	--
Other hardwoods	90,800	17,504	14,398	14,662	7,501	8,227	6,052	1,927	4,073	2,251	7,957	5,137	1,111
Noncommercial species	17,325	7,481	5,138	1,985	1,019	894	260	213	133	202	--	--	--
Total	2,429,445	277,802	330,363	361,444	319,625	279,566	250,989	164,777	130,710	92,420	144,431	58,962	18,356
All species	2,608,240	314,996	370,874	399,661	340,383	293,963	256,757	169,113	135,792	95,347	151,258	61,740	18,356

Table 25.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Class of timber	All species	Softwoods	Hardwoods
LIVE TREES			
Growing-stock trees			
Sawtimber			
Saw log portion	1,262,469	87,677	1,174,792
Upper stem portion	212,903	10,655	202,248
Subtotal	1,475,372	98,332	1,377,040
Poletimber	983,987	73,263	910,724
Total growing-stock	2,459,359	171,595	2,287,764
Cull trees			
Rough and rotten trees			
Sawtimber	58,968	1,459	57,509
Poletimber	63,258	4,444	58,814
Subtotal	122,226	5,903	116,323
Short-log trees	26,655	1,297	25,358
Total cull	148,881	7,200	141,681
TOTAL LIVE TREES	2,608,240	178,795	2,429,445
SALVABLE DEAD TREES	31,413	2,404	29,009
ALL CLASSES	2,639,653	181,199	2,458,454

Table 26.--Net volume of growing stock, sawtimber, short-log, and rough and rotten trees on commercial forest land by individual species, Southern Lower Peninsula, Michigan, 1980

Species	Total all live	Growing stock	Short-log cull	Rough and rotten cull	Sawtimber
	- - - - - - - - Thousand cubic feet - - - - - - - -				Thousand board feet 1/
SOFTWOODS					
Balsam fir	185	185	--	--	708
Eastern redcedar	357	357	--	--	872
Tamarack	4,049	4,010	--	39	7,030
White spruce	1,816	1,718	98	--	538
Jack pine	13,304	13,278	1	25	29,599
Red pine	50,839	48,798	183	1,858	109,427
White pine	68,627	66,928	492	1,207	278,683
Scotch pine	27,131	25,361	227	1,543	54,902
Austrian pine	1,061	221	155	685	1,070
Northern white-cedar	4,616	3,929	141	546	4,699
Hemlock	6,810	6,810	--	--	31,329
Total	178,795	171,595	1,297	5,903	518,857
HARDWOODS					
Boxelder	5,997	4,804	279	914	3,244
Black maple	788	583	--	205	3,166
Red maple	318,107	296,657	3,629	17,821	942,371
Silver maple	108,911	101,778	835	6,298	305,030
Sugar maple	120,640	114,077	1,780	4,783	429,899
Ohio buckeye	258	258	--	--	--
Yellow birch	9,092	7,627	632	833	21,552
Paper birch	20,723	20,122	--	601	12,825
Bitternut hickory	34,976	33,831	251	894	92,106
Pignut hickory	13,324	13,057	202	65	47,773
Shellbark hickory	3,603	3,418	--	185	11,290
Shagbark hickory	51,682	50,198	703	781	163,748
Mockernut hickory	3,128	3,128	--	--	11,066
Hackberry	679	679	--	--	2,391
Flowering dogwood	696	--	--	696	--
Beech	53,084	47,446	1,850	3,788	196,968
White ash	181,187	174,941	2,293	3,953	512,905
Black ash	28,128	26,987	--	1,141	38,698
Green ash	28,129	25,980	1,191	958	63,711
Honeylocust	959	959	--	--	--
Butternut	4,566	3,384	--	1,182	7,525
Black walnut	27,646	26,573	288	785	84,707
Yellow-poplar		0 25	--	--	87,069
Osage orange	329	329	--	--	--
Red mulberry	597	--	--	597	--
Black tupelo	1,897	1,716	--	181	3,474
Sycamore	12,799	12,611	--	188	53,568
Balsam poplar	10,222	10,053	--	169	26,420
Eastern cottonwood	60,649	59,906	--	743	246,169
Bigtooth aspen	80,346	78,743	--	1,603	149,001
Quaking aspen	79,264	76,160	--	3,104	95,703
Black cherry	126,713	116,348	2,349	8,016	274,808
White oak	266,655	256,368	2,136	8,151	987,183
Swamp white oak	40,259	38,572	284	1,403	163,047
Scarlet oak	1,487	1,298	--	189	3,015
Northern pin oak	11,536	11,226	219	91	28,743
Bur oak	14,374	13,924	335	115	64,319
Chinkapin oak	448	448	--	--	--
Pin oak	1,580	1,580	--	--	4,228
Northern red oak	347,781	337,986	3,419	7,376	1,379,437
Black oak	100,103	96,743	1,607	1,753	407,076
Black locust	3,099	2,790	--	309	4,328
Black willow	29,155	23,737	1,563	3,855	94,262
Sassafras	34,335	28,945	181	5,209	34,503
American basswood	88,591	83,569	141	4,881	300,860
Ammerican elm	48,637	0 5,244	191	3,202	52,672
Slippery elm	12,164	11,297	--	867	14,260
Rock elm	3,372	2,259	--	1,113	1,558
Noncommercial species	17,325	--	--	17,325	--
Total	2,429,445	2,287,764	25,358	116,323	7,426,678
All species	2,608,240	2,459,359	26,655	122,226	7,945,535

Table 27.--Net volume of noncommercial species (nongrowing-stock volume) on commercial forest land by individual species, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species	Nongrowing-stock (rough tree) volume
Mountain maple	748
Ailanthus	540
American hornbeam	946
Hawthorn	3,528
Apple	3,905
Eastern hophornbeam	6,160
Pin cherry	814
Chokecherry	684
All species	17,325

Table 28.--Net volume of growing stock on commercial forest land by county and species group, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All counties	County										
		Allegan	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	66,928	18,496	365	--	--	--	--	--	--	--	1,168	--
Red pine	48,798	5,233	3,332	--	--	1,142	--	--	--	--	--	--
Jack pine	13,278	4,116	--	--	--	--	--	--	--	--	--	--
White spruce	1,718	--	1,082	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	185	--	--	--	--	--	--	--	--	--	--	--
Hemlock	6,810	429	--	--	--	--	--	--	--	--	--	--
Tamarack	4,010	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	3,929	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	25,939	4,816	1,009	--	188	679	1,138	--	389	--	--	--
Total	171,595	33,090	5,788	--	188	1,821	1,138	--	389	--	1,168	--
HARDWOODS												
Select white oaks	309,312	24,481	14,142	1,940	8,720	8,375	3,762	1,175	2,640	6,378	4,532	1,792
Select red oaks	337,986	23,781	34,560	7,224	1,083	993	6,825	3,104	1,218	4,270	4,903	454
Other red oaks	110,847	8,375	12,116	1,303	--	4,201	--	228	--	--	2,384	--
Hickory	103,632	2,516	8,659	1,174	1,837	6,343	2,650	2,505	4,215	923	--	700
Yellow birch	7,627	564	613	545	--	550	1,977	--	--	--	--	--
Hard maple	114,660	1,542	17,838	12,285	1,329	1,143	1,665	538	4,601	4,558	1,190	5,088
Soft maple	398,435	21,681	21,122	10,411	22,115	17,244	17,254	5,533	5,318	7,753	7,814	1,657
Beech	47,446	3,768	3,509	2,434	--	1,676	1,306	--	1,573	1,595	--	--
Ash	227,908	12,522	6,779	5,328	8,617	15,101	7,058	2,995	9,080	5,176	3,663	3,288
Balsam poplar	10,053	--	--	1,414	--	--	--	--	--	--	--	--
Cottonwood	59,906	593	351	5,929	1,708	447	314	254	213	864	--	402
Bigtooth aspen	78,743	4,750	1,720	1,507	1,327	352	--	1,009	414	652	1,908	--
Quaking aspen	76,160	2,220	819	--	--	1,684	1,310	--	--	234	339	--
Basswood	83,569	632	4,270	2,452	1,910	9,903	2,281	847	3,918	2,817	1,120	1,935
Yellow-poplar	19,425	3,198	--	7,361	--	598	1,945	--	--	--	--	--
Black walnut	26,573	--	--	--	505	--	2,989	1,062	639	357	--	1,053
Black cherry	116,348	7,360	11,634	9,783	3,133	10,488	8,459	287	334	848	--	265
Butternut	3,384	--	--	245	305	471	514	--	75	--	--	--
Elm	58,800	2,345	2,092	5,606	2,778	2,769	5,549	280	4,066	1,060	171	1,968
Paper birch	20,122	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	76,828	6,883	1,570	7,415	283	1,375	1,755	--	2,383	--	356	1,189
Total	2,287,764	127,211	141,794	84,356	55,750	83,713	67,613	19,817	40,687	37,485	28,380	19,791
All species	2,459,359	160,301	147,582	84,356	55,938	85,534	68,751	19,817	41,076	37,485	29,548	19,791

(Table 28 continued on next page)

(Table 28 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	135	--	--	2,280	1,186	--	--	--	--	--	10,744
Red pine	--	--	--	--	3,132	189	2,444	--	4,290	--	--	4,993
Jack pine	--	--	--	--	--	--	193	--	--	--	--	954
White spruce	--	166	--	--	256	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	185	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	885
Tamarack	233	--	267	--	--	336	206	--	--	810	--	1,361
Northern white-cedar	--	--	--	--	--	--	--	--	--	662	--	161
Other softwoods	--	--	--	205	5,966	707	--	--	2,479	--	--	--
Total	233	301	267	205	11,634	2,418	3,028	--	6,769	1,472	--	19,098
HARDWOODS												
Select white oaks	--	5,412	1,044	14,789	1,165	14,850	11,534	5,322	15,969	970	8,384	22,927
Select red oaks	--	2,927	4,882	12,571	2,686	14,474	8,028	2,907	22,034	--	8,525	26,174
Other red oaks	--	297	835	16,625	4,886	21,012	221	--	826	--	1,261	3,468
Hickory	--	2,640	245	12,588	2,030	1,995	2,747	6,396	4,895	789	4,842	897
Yellow birch	--	--	--	345	306	239	343	--	--	224	--	4
Hard maple	--	3,378	1,249	--	308	9,246	6,901	6,598	--	3,560	1,919	1,499
Soft maple	1,921	4,774	3,353	6,930	7,611	24,980	11,551	5,462	10,413	11,309	4,325	24,139
Beech	--	1,118	3,327	--	377	900	1,195	579	--	782	--	1,963
Ash	3,496	6,804	1,869	6,302	2,360	7,339	5,706	4,371	3,614	1,738	1,929	10,377
Balsam poplar	1,119	290	--	--	--	--	964	--	--	--	--	455
Cottonwood	11,105	4,867	--	542	269	--	2,041	1,550	--	1,548	5,607	--
Bigtooth aspen	1,358	649	1,550	3,372	3,267	5,032	333	1,117	1,359	--	--	12,688
Quaking aspen	10,992	3,161	972	247	216	892	2,982	574	280	189	--	5,489
Basswood	--	2,779	3,377	2,522	67	3,494	2,626	4,771	593	1,827	2,267	1,267
Yellow-poplar	--	--	--	--	3,073	--	--	--	--	--	--	--
Black walnut	--	--	440	751	--	--	--	1,337	--	--	1,988	--
Black cherry	936	1,772	1,131	13,160	3,711	3,631	652	1,231	4,160	197	1,734	1,620
Butternut	--	--	--	--	374	1,050	--	--	--	--	--	--
Elm	305	1,998	924	1,188	1,043	2,388	1,656	1,236	294	1,496	1,272	4,815
Paper birch	4,927	--	--	--	--	--	1,876	--	--	--	--	2,782
Other hardwoods	619	1,652	964	3,595	2,350	3,367	--	585	369	800	1,222	7,709
Total	36,778	44,518	26,162	95,527	36,099	114,889	61,356	44,036	64,806	25,429	45,275	128,273
All species	37,011	44,819	26,429	95,732	47,733	117,307	64,384	44,036	71,575	26,901	45,275	147,371

(Table 28 continued on next page)

(Table 28 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	13,409	214	4,087	1,222	7,713	322	--	--	1,012	4,575	--	--
Red pine	17,241	516	6,060	--	--	--	--	--	--	226	--	--
Jack pine	5,778	--	2,237	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	214	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	3,501	--	1,033	--	632	--	--	--	330	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	797	--
Northern white-cedar	21	--	--	--	--	--	--	--	3,085	--	--	--
Other softwoods	--	--	7,187	142	604	169	--	--	--	261	--	--
Total	39,950	730	20,604	1,364	8,949	705	--	--	4,427	5,062	797	--
HARDWOODS												
Select white oaks	20,204	11,728	7,309	15,443	15,291	3,107	214	9,365	2,198	5,400	28,393	10,357
Select red oaks	32,413	17,658	11,373	3,325	12,129	13,753	328	14,234	2,096	15,717	10,788	10,549
Other red oaks	18,636	1,638	3,676	2,387	--	2,836	--	224	--	1,060	2,352	--
Hickory	188	5,170	283	1,524	1,777	7,569	--	2,794	272	4,104	7,493	872
Yellow birch	262	--	1,059	--	347	--	--	--	--	249	--	--
Hard maple	662	827	3,544	2,739	5,114	973	--	2,543	5,406	5,117	996	304
Soft maple	24,178	6,571	21,360	8,129	7,622	10,666	1,758	12,426	19,149	19,675	7,068	5,163
Beech	3,217	520	7,602	--	3,096	--	250	1,671	371	2,390	1,355	872
Ash	3,564	8,483	5,038	5,664	15,269	7,450	2,845	15,311	7,882	11,202	5,598	4,090
Balsam poplar	--	814	--	463	--	--	2,047	--	2,487	--	--	--
Cottonwood	--	204	1,935	1,852	9,423	--	676	2,687	1,418	1,034	1,266	807
Bigtooth aspen	10,410	272	994	1,748	153	7,813	272	1,813	7,364	2,119	1,238	183
Quaking aspen	3,037	2,320	600	6,297	3,501	519	8,503	911	15,712	659	673	828
Basswood	31	781	1,682	318	5,065	1,807	667	4,161	2,694	1,120	2,207	5,361
Yellow-poplar	--	--	481	--	--	1,930	--	--	--	839	--	--
Black walnut	--	325	--	--	--	8,954	--	--	279	287	5,507	--
Black cherry	1,057	3,433	734	355	3,420	3,293	247	3,617	1,697	8,172	3,797	--
Butternut	--	--	--	--	--	--	--	--	350	--	--	--
Elm	590	950	1,340	512	510	1,239	149	361	620	3,321	347	1,562
Paper birch	359	--	--	4,035	--	--	3,326	--	2,817	--	--	--
Other hardwoods	2,153	465	3,420	3,999	120	1,389	577	842	--	11,586	3,614	2,222
Total	120,961	62,159	72,430	58,790	82,837	73,298	21,859	72,960	72,812	94,051	82,692	43,170
All species	160,911	62,889	93,034	60,154	91,786	74,003	21,859	72,960	77,239	99,113	83,489	43,170

Table 29.--Net volume of sawtimber on commercial forest land by county and species group, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All counties	County										
		Allegan	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	278,683	68,648	2,187	--	--	--	--	--	--	--	2,707	--
Red pine	109,427	2,486	7,643	--	--	1,547	--	--	--	--	--	--
Jack pine	29,599	--	--	--	--	--	--	--	--	--	--	--
White spruce	538	--	538	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	708	--	--	--	--	--	--	--	--	--	--	--
Hemlock	31,329	2,324	--	--	--	--	--	--	--	--	--	--
Tamarack	7,030	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	4,699	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	56,844	2,671	2,175	--	872	1,522	--	--	--	--	--	--
Total	518,857	76,129	12,543	--	872	3,069	--	--	--	--	2,707	--
HARDWOODS												
Select white oaks	1,214,549	73,061	50,340	4,953	40,677	44,325	14,430	3,742	9,396	27,711	16,600	9,209
Select red oaks	1,379,437	98,195	154,222	25,936	3,530	5,750	35,192	11,909	5,669	15,527	16,189	2,628
Other red oaks	443,062	24,597	59,761	4,228	--	19,400	--	899	--	--	5,964	--
Hickory	325,984	8,456	24,692	1,751	6,858	22,650	10,369	--	5,546	2,102	--	2,331
Yellow birch	21,552	--	--	2,713	--	2,931	7,046	--	--	--	--	--
Hard maple	433,065	6,499	79,424	32,882	3,160	3,129	6,470	1,133	13,264	23,107	4,106	26,994
Soft maple	1,247,401	78,264	65,286	24,298	76,340	55,811	73,364	14,242	22,617	34,137	33,015	3,665
Beech	196,968	12,694	16,247	7,656	--	8,792	5,177	--	8,311	4,067	--	--
Ash	615,313	46,319	12,647	13,122	16,819	55,179	25,701	11,814	14,565	14,129	12,335	9,579
Balsam poplar	26,420	--	--	5,883	--	--	--	--	--	--	--	--
Cottonwood	246,169	2,983	2,017	23,730	8,836	2,592	1,871	1,272	1,083	4,956	--	1,490
Bigtooth aspen	149,001	4,846	1,891	1,642	3,163	2,210	--	1,611	2,601	--	3,920	--
Quaking aspen	95,703	5,165	--	--	--	1,470	--	--	--	--	1,018	--
Basswood	300,860	3,509	23,740	13,140	4,875	41,551	7,727	--	14,219	2,738	6,050	10,830
Yellow-poplar	87,069	15,904	--	30,534	--	--	11,116	--	--	--	--	--
Black walnut	84,707	--	--	--	3,230	--	6,187	3,860	--	1,296	--	1,405
Black cherry	274,808	15,895	31,461	35,524	10,220	27,936	23,142	--	--	--	--	--
Butternut	7,525	--	--	--	--	2,605	--	--	--	--	--	--
Elm	68,490	4,806	1,977	11,453	3,154	1,141	4,633	--	3,803	1,350	--	2,809
Paper birch	12,825	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	195,770	14,858	1,481	35,944	--	4,599	3,946	--	8,212	--	1,143	--
Total	7,426,678	416,051	525,186	275,389	180,862	302,071	236,371	50,482	109,286	131,120	100,340	70,940
All species	7,945,535	492,180	537,729	275,389	181,734	305,140	236,371	50,482	109,286	131,120	103,047	70,940

(Table 29 continued on next page)

(Table 29 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	660	--	--	11,696	4,953	--	--	--	--	--	43,119
Red pine	--	--	--	--	10,610	1,058	--	--	10,032	--	--	12,468
Jack pine	--	--	--	--	--	--	950	--	--	--	--	86
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	708	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	4,923
Tamarack	--	--	--	--	--	--	--	--	--	3,799	--	243
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	212
Other softwoods	--	--	--	--	12,243	1,070	--	--	8,070	--	--	--
Total	--	660	--	--	34,549	7,081	1,658	--	18,102	3,799	--	61,051
HARDWOODS												
Select white oaks	--	19,969	4,392	68,145	4,103	48,506	41,198	29,895	74,880	2,828	35,636	62,204
Select red oaks	--	14,901	27,189	41,670	12,950	42,921	33,369	12,160	92,946	--	38,815	90,197
Other red oaks	--	1,746	3,546	89,223	20,839	74,018	--	--	4,412	--	7,642	15,168
Hickory	--	12,190	--	38,523	3,345	8,062	3,945	25,875	20,781	4,553	8,952	3,140
Yellow birch	--	--	--	1,847	--	--	--	--	--	1,382	--	--
Hard maple	--	16,107	3,557	--	--	35,213	20,877	28,687	--	16,422	12,271	1,595
Soft maple	1,893	15,669	11,983	28,562	27,789	49,936	37,123	11,064	32,138	39,432	22,239	58,336
Beech	--	3,819	11,924	--	1,675	3,162	4,730	3,244	--	4,276	--	5,024
Ash	9,212	18,525	6,250	7,889	1,621	12,498	15,853	15,806	12,650	4,699	2,390	18,575
Balsam poplar	3,856	--	--	--	--	--	4,709	--	--	--	--	2,389
Cottonwood	45,346	19,909	--	2,786	1,539	--	--	6,697	--	8,065	21,411	--
Bigtooth aspen	--	2,660	3,894	11,238	7,605	--	--	4,521	4,227	--	--	23,755
Quaking aspen	20,950	10,833	--	--	--	--	1,403	1,784	--	--	--	5,753
Basswood	--	7,731	14,466	4,325	--	16,470	9,153	11,332	2,575	9,252	7,261	4,680
Yellow-poplar	--	--	--	--	12,897	--	--	--	--	--	--	--
Black walnut	--	--	--	1,741	--	--	--	--	--	--	2,553	--
Black cherry	1,550	964	1,224	41,422	8,924	6,334	--	1,423	1,836	1,088	2,084	883
Butternut	--	--	--	--	1,404	1,692	--	--	--	--	--	--
Elm	--	3,180	--	--	--	5,571	--	2,705	--	--	--	8,563
Paper birch	3,570	--	--	--	--	--	1,203	--	--	--	--	1,494
Other hardwoods	--	1,070	2,502	1,934	10,206	1,075	--	3,090	1,918	1,544	6,292	29,264
Total	86,377	149,273	90,927	339,305	114,897	305,458	173,563	158,283	248,363	93,541	167,546	331,020
All species	86,377	149,933	90,927	339,305	149,446	312,539	175,221	158,283	266,465	97,340	167,546	392,071

(Table 29 continued on next page)

(Table 29 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	58,263	1,195	15,961	6,564	41,363	1,730	--	--	6,152	13,485	--	--
Red pine	51,801	1,410	10,372	--	--	--	--	--	--	--	--	--
Jack pine	22,435	--	6,128	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	19,116	--	2,052	--	2,914	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	2,988	--
Northern white-cedar	26	--	--	--	--	--	--	--	4,461	--	--	--
Other softwoods	--	--	28,221	--	--	--	--	--	--	--	--	--
Total	151,641	2,605	62,734	6,564	44,277	1,730	--	--	10,613	13,485	2,988	--
HARDWOODS												
Select white oaks	51,878	52,378	15,980	59,630	56,487	14,986	1,244	42,202	9,214	20,193	154,586	49,571
Select red oaks	94,579	91,873	50,256	15,862	44,737	63,767	--	49,320	11,062	61,551	62,532	52,033
Other red oaks	65,784	4,451	12,830	3,065	--	15,654	--	1,312	--	4,815	3,708	--
Hickory	--	27,596	1,623	6,440	--	23,352	--	10,673	1,622	8,620	28,226	3,711
Yellow birch	13	--	3,982	--	1,638	--	--	--	--	--	--	--
Hard maple	4	3,061	13,198	13,258	14,148	--	--	7,722	17,186	24,205	3,723	1,663
Soft maple	71,006	28,203	70,418	17,463	27,726	42,052	6,703	45,559	49,535	43,387	18,544	9,602
Beech	11,058	2,860	39,979	--	12,640	--	1,334	6,189	1,344	14,227	2,073	4,466
Ash	4,947	30,097	12,212	9,878	43,823	29,961	9,695	37,508	15,139	27,746	20,841	15,289
Balsam poplar	--	2,014	--	1,442	--	--	2,821	--	3,306	--	--	--
Cottonwood	--	--	11,551	5,625	41,123	--	--	13,410	7,471	6,543	2,776	1,087
Bigtooth aspen	16,803	--	--	6,654	--	24,724	1,520	9,421	8,073	2,022	--	--
Quaking aspen	4,450	--	--	--	1,351	--	13,035	1,173	24,599	--	1,762	957
Basswood	68	2,590	9,265	1,859	14,699	8,425	--	11,068	9,478	3,686	8,158	15,940
Yellow-poplar	--	--	--	--	--	12,033	--	--	--	4,585	--	--
Black walnut	--	--	--	--	--	39,694	--	--	1,459	--	23,282	--
Black cherry	1,625	3,688	1,005	--	11,210	7,603	--	12,090	1,297	19,365	5,015	--
Butternut	--	--	--	--	--	--	--	--	1,824	--	--	--
Elm	56	--	3,978	--	--	--	--	--	837	5,394	--	3,080
Paper birch	74	--	--	--	--	--	2,081	--	4,403	--	--	--
Other hardwoods	2,107	--	12,853	685	--	--	3,059	2,435	--	33,345	3,511	8,697
Total	324,452	248,811	259,130	141,861	269,582	282,251	41,492	250,082	167,849	279,684	338,737	166,096
All species	476,093	251,416	321,864	148,425	313,859	283,981	41,492	250,082	178,462	293,169	341,725	166,096

Table 30.--Net volume of growing stock on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
White pine	66,928	4,276	9,867	13,012	7,179	9,254	5,550	4,281	3,914	2,414	4,832	2,349	--
Red pine	48,798	11,410	17,238	12,940	5,739	1,440	15	16	--	--	--	--	--
Jack pine	13,278	4,447	2,968	3,557	1,663	643	--	--	--	--	--	--	--
White spruce	1,718	1,426	166	126	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	185	--	--	185	--	--	--	--	--	--	--	--	--
Hemlock	6,810	285	686	533	1,012	563	5	--	1,168	341	1,788	429	--
Tamarack	4,010	1,835	758	275	1,142	--	--	--	--	--	--	--	--
Northern white-cedar	3,929	2,226	781	366	352	204	--	--	--	--	--	--	--
Other softwoods	25,939	8,968	5,927	5,966	2,786	2,292	--	--	--	--	--	--	--
Total	171,595	34,873	38,391	36,960	19,873	14,396	5,570	4,297	5,082	2,755	6,620	2,778	--
HARDWOODS													
Select white oaks	309,312	21,041	31,152	37,905	34,947	36,376	40,697	29,709	22,574	13,826	25,386	13,296	2,403
Select red oaks	337,986	17,207	27,244	42,181	53,635	49,953	45,125	32,417	25,035	16,964	23,365	4,860	--
Other red oaks	110,847	6,454	8,546	14,900	21,605	16,976	14,586	11,040	5,393	3,816	5,859	1,672	--
Hickory	103,632	8,016	16,993	23,227	19,474	13,748	8,566	6,292	2,885	2,076	1,495	396	464
Yellow birch	7,627	720	1,777	985	1,035	1,580	674	325	279	252	--	--	--
Hard maple	114,660	9,464	10,894	15,827	11,328	14,951	18,563	9,322	7,820	5,344	7,383	2,463	1,301
Soft maple	398,435	46,620	54,191	57,313	46,488	43,134	37,682	27,757	21,361	17,991	28,920	14,612	2,366
Beech	47,446	2,148	4,106	4,281	3,757	4,027	6,864	4,925	5,334	4,738	6,232	1,034	--
Ash	227,908	38,137	35,901	37,963	28,410	21,682	22,637	14,396	10,567	5,963	9,565	2,455	232
Balsam poplar	10,053	806	2,905	1,396	1,383	1,057	955	505	--	455	591	--	--
Cottonwood	59,906	2,761	3,499	7,977	5,444	5,855	9,021	3,551	3,970	4,702	7,329	5,204	593
Bigtooth aspen	78,743	12,316	14,780	22,907	18,789	7,056	2,229	3	663	--	--	--	--
Quaking aspen	76,160	19,817	24,253	13,891	10,378	5,231	2,372	--	218	--	--	--	--
Basswood	83,569	7,617	11,176	10,307	9,912	12,003	10,728	7,418	4,170	3,518	4,747	331	1,642
Yellow-poplar	19,425	1,064	1,337	1,295	1,950	2,982	3,209	879	4,017	1,757	935	--	--
Black walnut	26,573	2,491	2,776	4,692	3,279	4,380	4,422	1,633	1,052	1,229	619	--	--
Black cherry	116,348	17,472	24,913	18,646	19,345	14,643	8,411	6,704	3,234	2,180	585	215	--
Butternut	3,384	639	575	649	495	676	180	170	--	--	--	--	--
Elm	58,800	22,615	15,794	7,819	5,416	3,176	2,289	654	708	--	329	--	--
Paper birch	20,122	7,178	5,378	4,847	1,003	786	373	276	281	--	--	--	--
Other hardwoods	76,828	14,652	12,023	12,269	6,240	7,415	5,434	1,132	3,819	2,251	6,771	4,048	774
Total	2,287,764	259,235	310,213	341,277	304,313	267,687	245,017	159,108	123,380	87,062	130,111	50,586	9,775
All species	2,459,359	294,108	348,604	378,237	324,186	282,083	250,587	163,405	128,462	89,817	136,731	53,364	9,775

Table 31.--Net volume of sawtimber on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
White pine	278,683	62,584	35,892	48,485	30,653	23,241	22,079	13,874	27,387	14,488	--
Red pine	109,427	70,547	30,846	7,863	84	87	--	--	--	--	--
Jack pine	29,599	17,653	8,554	3,392	--	--	--	--	--	--	--
White spruce	538	538	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	708	708	--	--	--	--	--	--	--	--	--
Hemlock	31,329	2,152	5,041	2,975	26	--	6,728	2,143	9,940	2,324	--
Tamarack	7,030	1,416	5,614	--	--	--	--	--	--	--	--
Northern white-cedar	4,699	1,901	1,835	963	--	--	--	--	--	--	--
Other softwoods	56,844	30,696	13,868	12,280	--	--	--	--	--	--	--
Total	518,857	188,195	101,650	75,958	30,763	23,328	28,807	16,017	37,327	16,812	--
HARDWOODS											
Select white oaks	1,214,549	--	181,678	200,851	226,661	169,071	130,831	80,163	142,621	72,239	10,434
Select red oaks	1,379,437	--	270,195	270,868	251,410	184,315	147,042	98,319	131,649	25,639	--
Other red oaks	443,062	--	106,793	94,633	84,196	63,197	29,471	21,626	33,687	9,459	--
Hickory	325,984	--	111,816	83,452	51,982	38,063	16,621	11,831	8,099	2,273	1,847
Yellow birch	21,552	--	5,021	8,232	3,569	1,740	1,507	1,483	--	--	--
Hard maple	433,065	--	58,363	82,137	99,989	52,441	46,153	29,627	42,543	14,262	7,550
Soft maple	1,247,401	--	237,728	227,431	195,228	146,364	110,852	91,976	149,967	75,623	12,232
Beech	196,968	--	19,608	20,341	38,996	28,855	28,367	25,763	30,278	4,760	--
Ash	615,313	--	142,182	114,669	124,009	77,630	57,821	32,937	52,341	12,765	959
Balsam poplar	26,420	--	8,193	5,328	5,248	2,769	--	2,389	2,493	--	--
Cottonwood	246,169	--	30,258	33,755	49,354	20,730	22,998	22,663	36,040	27,388	2,983
Bigtooth aspen	149,001	--	94,151	39,021	12,109	17	3,703	--	--	--	--
Quaking aspen	95,703	--	52,896	27,946	13,606	--	1,255	--	--	--	--
Basswood	300,860	--	54,794	64,506	61,255	42,138	24,107	20,034	25,726	1,847	6,453
Yellow-poplar	87,069	--	10,157	15,831	17,872	4,943	22,957	10,654	4,655	--	--
Black walnut	84,707	--	16,626	23,805	22,528	8,194	4,722	6,275	2,557	--	--
Black cherry	274,808	--	94,993	80,198	44,027	30,839	13,568	8,945	1,736	502	--
Butternut	7,525	--	2,357	3,344	1,002	822	--	--	--	--	--
Elm	68,490	--	29,077	17,418	12,812	3,411	3,734	--	2,038	--	--
Paper birch	12,825	--	4,171	3,916	1,940	1,203	1,595	--	--	--	--
Other hardwoods	195,770	--	32,200	37,816	26,012	6,248	20,183	11,055	36,161	21,729	4,366
Total	7,426,678	--	1,563,257	1,455,498	1,343,805	882,990	687,487	475,740	702,591	268,486	46,824
All species	7,945,535	188,195	1,664,907	1,531,456	1,374,568	906,318	716,294	491,757	739,918	285,298	46,824

[1/] International 1/4-inch rule.

Table 32.--Net volume of growing stock on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
SOFTWOODS								
White pine	66,928	--	2,012	24,699	--	--	--	188
Red pine	48,798	2	34,833	3,813	--	--	--	--
Jack pine	13,278	8,164	2,998	--	--	--	--	--
White spruce	1,718	--	--	--	--	1,338	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	185	--	185	--	--	--	--	--
Hemlock	6,810	--	--	--	--	--	--	--
Tamarack	4,010	--	--	--	--	--	--	369
Northern white-cedar	3,929	--	--	--	--	--	--	2,868
Other softwoods	25,939	--	644	1,777	--	1,678	--	--
Total	171,595	8,166	40,672	30,289	--	3,016	--	3,425
HARDWOODS								
Select white oaks	309,312	9	772	511	--	--	--	--
Select red oaks	337,986	1,612	528	2,837	--	--	--	--
Other red oaks	110,847	55	15	--	--	--	--	--
Hickory	103,632	306	--	--	--	--	--	--
Yellow birch	7,627	--	--	--	--	--	--	--
Hard maple	114,660	--	--	--	--	--	--	--
Soft maple	398,435	795	15	311	--	--	--	--
Beech	47,446	--	--	--	--	--	--	--
Ash	227,908	--	--	--	--	--	--	21
Balsam poplar	10,053	--	--	--	--	--	--	--
Cottonwood	59,906	--	--	--	--	--	--	--
Bigtooth aspen	78,743	--	143	--	--	--	--	--
Quaking aspen	76,160	--	--	--	--	--	--	363
Basswood	83,569	--	--	--	--	--	--	--
Yellow-poplar	19,425	--	344	--	--	--	--	--
Black walnut	26,573	--	--	--	--	--	--	--
Black cherry	116,348	--	4	670	--	1,272	--	--
Butternut	3,384	--	--	--	--	--	--	350
Elm	58,800	--	--	--	--	--	--	21
Paper birch	20,122	--	--	--	--	--	--	148
Other hardwoods	76,828	183	--	--	--	--	--	--
Total	2,287,764	2,960	1,821	4,329	--	1,272	--	903
All species	2,459,359	11,126	42,493	34,618	--	4,288	--	4,328

(Table 32 continued on next page)

(Table 32 continued)

Species group	Forest type							
	Tamarack	Oak hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS								
White pine	--	13,232	2,001	19,332	3,764	--	1,700	--
Red pine	--	3,848	583	2,317	2,343	--	1,059	--
Jack pine	--	1,783	--	1	--	--	332	--
White spruce	--	214	--	166	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--
Hemlock	--	645	387	5,778	--	--	--	--
Tamarack	1,018	--	1,813	810	--	--	--	--
Northern white-cedar	--	--	37	664	13	347	--	--
Other softwoods	--	1,507	389	7,769	--	--	12,175	--
Total	1,018	21,229	5,210	36,837	6,120	347	15,266	--
HARDWOODS								
Select white oaks	--	233,825	19,987	50,420	3,788	--	--	--
Select red oaks	--	243,613	8,384	73,076	7,762	--	174	--
Other red oaks	--	96,820	2,374	10,199	1,073	--	311	--
Hickory	--	61,941	2,953	37,932	500	--	--	--
Yellow birch	--	242	2,101	5,284	--	--	--	--
Hard maple	--	7,490	2,225	104,945	--	--	--	--
Soft maple	--	45,112	206,603	137,736	7,520	343	--	--
Beech	--	2,099	2,183	42,786	378	--	--	--
Ash	--	23,715	77,188	121,314	5,483	187	--	--
Balsam poplar	--	365	2,840	2,283	4,565	--	--	--
Cottonwood	--	5,979	27,325	18,837	7,765	--	--	--
Bigtooth aspen	--	25,525	1,779	17,615	33,681	--	--	--
Quaking aspen	--	8,140	16,647	12,619	37,592	196	603	--
Basswood	--	6,341	12,770	61,729	1,641	1,088	--	--
Yellow-poplar	--	2,537	1,945	14,599	--	--	--	--
Black walnut	--	18,533	2,782	5,258	--	--	--	--
Black cherry	--	40,600	13,666	56,997	3,006	--	133	--
Butternut	--	1,099	776	1,159	--	--	--	--
Elm	--	4,454	27,954	23,701	2,420	187	--	63
Paper birch	--	1,744	3,725	6,589	6,834	1,082	--	--
Other hardwoods	--	7,622	32,082	36,821	120	--	--	--
Total	--	837,796	468,289	841,899	124,128	3,083	1,221	63
All species	1,018	859,025	473,499	878,736	130,248	3,430	16,487	63

Table 33.--Net volume of sawtimber on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
SOFTWOODS								
White pine	278,683	--	5,416	90,514	--	--	--	879
Red pine	109,427	6	79,111	7,237	--	--	--	--
Jack pine	29,599	18,341	5,916	--	--	--	--	--
White spruce	538	--	--	--	--	538	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	708	--	708	--	--	--	--	--
Hemlock	31,329	--	--	--	--	--	--	--
Tamarack	7,030	--	--	--	--	--	--	243
Northern white-cedar	4,699	--	--	--	--	--	--	2,880
Other softwoods	56,844	--	2,196	8,768	--	1,449	--	--
Total	518,857	18,347	93,347	106,519	--	1,987	--	4,002
HARDWOODS								
Select white oaks	1,214,549	--	4,512	--	--	--	--	--
Select red oaks	1,379,437	6,768	1,755	2,832	--	--	--	--
Other red oaks	443,062	130	84	--	--	--	--	--
Hickory	325,984	1,337	--	--	--	--	--	--
Yellow birch	21,552	--	--	--	--	--	--	--
Hard maple	433,065	--	--	--	--	--	--	--
Soft maple	1,247,401	1	22	1,530	--	--	--	--
Beech	196,968	--	2	--	--	--	--	--
Ash	615,313	--	--	--	--	--	--	--
Balsam poplar	26,420	--	--	--	--	--	--	--
Cottonwood	246,169	--	--	--	--	--	--	--
Bigtooth aspen	149,001	--	2	--	--	--	--	--
Quaking aspen	95,703	--	--	--	--	--	--	158
Basswood	300,860	--	--	--	--	--	--	--
Yellow-poplar	87,069	--	--	--	--	--	--	--
Black walnut	84,707	--	--	--	--	--	--	--
Black cherry	274,808	--	20	1,847	--	3,160	--	--
Butternut	7,525	--	--	--	--	--	--	1,824
Elm	68,490	--	--	--	--	--	--	60
Paper birch	12,825	--	--	--	--	--	--	187
Other hardwoods	195,770	--	--	--	--	--	--	--
Total	7,426,678	8,236	6,397	6,209	--	3,160	--	2,229
All species	7,945,535	26,583	99,744	112,728	--	5,147	--	6,231

[1/]International 1/4-inch rule.

(Table 33 continued on next page)

(Table 33 continued)

Species group	Forest type							
	Tamarack	Oak hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS								
White pine	--	57,913	10,989	86,748	20,023	--	6,201	--
Red pine	--	8,197	1,139	5,368	6,265	--	2,104	--
Jack pine	--	3,567	--	--	--	--	1,775	--
White spruce	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--
Hemlock	--	2,978	35	28,316	--	--	--	--
Tamarack	--	--	2,988	3,799	--	--	--	--
Northern white-cedar	--	--	58	3	--	1,758	--	--
Other softwoods	--	7,484	--	7,926	--	--	29,021	--
Total	--	80,139	15,209	132,160	26,288	1,758	39,101	--
HARDWOODS								
Select white oaks	--	892,430	88,057	210,136	19,414	--	--	--
Select red oaks	--	987,560	40,850	306,070	33,602	--	--	--
Other red oaks	--	385,364	11,673	42,586	3,225	--	--	--
Hickory	--	194,063	7,907	120,575	2,102	--	--	--
Yellow birch	--	--	1,069	20,483	--	--	--	--
Hard maple	--	23,092	13,893	396,080	--	--	--	--
Soft maple	--	102,871	656,906	480,355	5,716	--	--	--
Beech	--	5,911	6,411	184,644	--	--	--	--
Ash	--	70,028	204,842	325,291	15,152	--	--	--
Balsam poplar	--	1,442	14,416	3,947	6,615	--	--	--
Cottonwood	--	30,343	98,972	83,290	33,564	--	--	--
Bigtooth aspen	--	44,508	4,492	44,583	55,416	--	--	--
Quaking aspen	--	4,456	36,304	15,424	39,361	--	--	--
Basswood	--	16,232	45,782	230,610	6,453	1,783	--	--
Yellow-poplar	--	12,171	11,117	63,781	--	--	--	--
Black walnut	--	63,602	7,117	13,988	--	--	--	--
Black cherry	--	89,638	34,725	142,830	2,588	--	--	--
Butternut	--	1,404	2,605	1,692	--	--	--	--
Elm	--	3,735	28,945	29,852	5,061	837	--	--
Paper birch	--	1,380	5,341	3,486	2,431	--	--	--
Other hardwoods	--	8,838	104,874	82,058	--	--	--	--
Total	--	2,939,068	1,426,298	2,801,761	230,700	2,620	--	--
All species	--	3,019,207	1,441,507	2,933,921	256,988	4,378	39,101	--

Table 34.--Net volume of growing stock on commercial forest land by species group and ownership class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
SOFTWOODS											
White pine	66,928	182	--	--	--	10,584	1,394	--	14,556	2,973	37,239
Red pine	48,798	1,011	--	--	--	16,366	14,009	--	516	4,377	12,519
Jack pine	13,278	374	--	--	--	4,727	171	--	--	455	7,551
White spruce	1,718	--	--	--	--	--	--	--	380	--	1,338
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	185	--	--	--	--	185	--	--	--	--	--
Hemlock	6,810	31	--	--	--	632	3,213	--	330	267	2,337
Tamarack	4,010	--	--	--	--	163	--	--	2,313	516	1,018
Northern white-cedar	3,929	53	--	--	--	129	--	--	3,400	--	347
Other softwoods	25,939	--	--	--	--	--	--	--	3,913	3,291	18,735
Total	171,595	1,651	--	--	--	32,786	18,787	--	25,408	11,879	81,084
HARDWOODS											
Select white oaks	309,312	2,553	--	448	--	30,003	2,454	--	141,970	9,468	122,416
Select red oaks	337,986	983	--	185	--	28,462	7,103	--	140,860	21,657	138,736
Other red oaks	110,847	3,754	--	--	--	13,080	638	--	29,394	5,316	58,665
Hickory	103,632	--	--	--	--	3,127	1,268	--	63,716	1,320	34,201
Yellow birch	7,627	25	--	--	--	471	--	--	2,465	242	4,424
Hard maple	114,660	37	--	--	--	1,862	504	--	74,813	5,332	32,112
Soft maple	398,435	697	--	1,001	--	29,112	4,529	--	193,439	35,728	133,929
Beech	47,446	20	--	--	--	322	--	--	27,716	3,466	15,922
Ash	227,908	123	--	--	--	10,534	2,299	--	126,943	10,196	77,813
Balsam poplar	10,053	--	--	--	--	--	--	--	9,342	--	711
Cottonwood	59,906	--	--	--	--	701	--	--	39,198	4,206	15,801
Bigtooth aspen	78,743	444	--	--	--	7,389	1,677	--	29,041	228	39,964
Quaking aspen	76,160	177	--	--	--	11,625	1,148	--	44,619	1,999	16,592
Basswood	83,569	55	--	--	--	466	1,315	--	49,571	4,180	27,982
Yellow-poplar	19,425	--	--	--	--	--	--	--	9,225	342	9,858
Black walnut	26,573	--	--	--	--	--	--	--	14,379	325	11,869
Black cherry	116,348	71	--	--	--	13,175	848	--	59,554	5,393	37,307
Butternut	3,384	--	--	--	--	--	471	--	1,625	325	963
Elm	58,800	19	--	156	--	810	497	--	30,269	2,675	24,374
Paper birch	20,122	67	--	--	--	1,047	--	--	13,431	318	5,259
Other hardwoods	76,828	--	--	--	--	2,200	1,813	--	29,116	6,205	37,494
Total	2,287,764	9,025	--	1,790	--	154,386	26,564	--	1,130,686	118,921	846,392
All species	2,459,359	10,676	--	1,790	--	187,172	45,351	--	1,156,094	130,800	927,476

Table 35.--Net volume of sawtimber on commercial forest land by species group and ownership class, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
SOFTWOODS											
White pine	278,683	889	--	--	--	58,469	5,374	--	64,409	15,132	134,410
Red pine	109,427	2,007	--	--	--	33,356	43,801	--	1,410	8,376	20,477
Jack pine	29,599	791	--	--	--	950	--	--	--	--	27,858
White spruce	538	--	--	--	--	--	--	--	--	--	538
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	708	--	--	--	--	708	--	--	--	--	--
Hemlock	31,329	100	--	--	--	2,914	17,959	--	--	1,070	9,286
Tamarack	7,030	--	--	--	--	243	--	--	6,787	--	--
Northern white-cedar	4,699	62	--	--	--	175	--	--	2,704	--	1,758
Other softwoods	56,844	--	--	--	--	--	--	--	9,722	9,894	37,228
Total	518,857	3,849	--	--	--	96,815	67,134	--	85,032	34,472	231,555
HARDWOODS											
Select white oaks	1,214,549	5,042	--	--	--	113,926	2,781	--	616,169	40,750	435,881
Select red oaks	1,379,437	3,250	--	886	--	120,309	12,102	--	622,077	86,508	534,305
Other red oaks	443,062	10,314	--	--	--	55,516	--	--	128,804	23,139	225,289
Hickory	325,984	--	--	--	--	5,920	4,603	--	201,503	3,962	109,996
Yellow birch	21,552	13	--	--	--	--	--	--	5,922	--	15,617
Hard maple	433,065	6	--	--	--	7,017	--	--	285,222	19,941	120,879
Soft maple	1,247,401	1,149	--	3,995	--	75,975	14,061	--	615,796	94,392	442,033
Beech	196,968	21	--	--	--	--	--	--	120,894	12,707	63,346
Ash	615,313	241	--	--	--	33,880	10,329	--	318,308	32,339	220,216
Balsam poplar	26,420	--	--	--	--	--	--	--	24,978	--	1,442
Cottonwood	246,169	--	--	--	--	3,078	--	--	165,797	11,091	66,203
Bigtooth aspen	149,001	783	--	--	--	4,723	5,490	--	66,804	--	71,201
Quaking aspen	95,703	588	--	--	--	27,101	1,626	--	55,298	1,797	9,293
Basswood	300,860	105	--	--	--	2,572	2,932	--	160,110	22,456	112,685
Yellow-poplar	87,069	--	--	--	--	--	--	--	44,619	1,480	40,970
Black walnut	84,707	--	--	--	--	--	--	--	44,944	--	39,763
Black cherry	274,808	68	--	--	--	31,621	--	--	143,622	11,551	87,946
Butternut	7,525	--	--	--	--	--	2,605	--	1,824	1,692	1,404
Elm	68,490	64	--	--	--	60	--	--	26,096	6,052	36,218
Paper birch	12,825	80	--	--	--	188	--	--	12,557	--	--
Other hardwoods	195,770	--	--	--	--	--	6,999	--	83,943	20,349	84,479
Total	7,426,678	21,724	--	4,881	--	481,886	63,528	--	3,745,287	390,206	2,719,166
All species	7,945,535	25,573	--	4,881	--	578,701	130,662	--	3,830,319	424,678	2,950,721

[1/] International 1/4-inch rule.

Table 36.--Net volume of growing stock on commercial forest land by forest type and stand-age class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	11,126	1,783	--	34	85	3,977	2	5,245	--	--	--	--	--	--
Red pine	42,493	50	3,228	9,572	9,941	19,702	--	--	--	--	--	--	--	--
White pine	34,618	--	--	1,667	--	9,524	--	9,585	13,842	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	4,288	--	--	--	4,288	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	4,328	222	--	1,688	--	--	--	--	1,905	--	--	513	--	--
Tamarack	1,018	1,018	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	859,025	19,126	23,963	3,756	46,715	90,124	72,813	52,193	170,882	116,590	43,374	174,200	38,672	6,617
Elm-ash-soft maple	473,499	18,184	20,668	32,118	59,744	39,567	47,832	30,791	55,160	70,678	28,774	63,660	6,323	--
Maple-birch	878,736	60,383	50,693	49,004	79,293	71,106	66,394	102,246	78,000	101,037	80,794	104,547	35,239	--
Aspen	130,248	13,938	18,985	7,548	21,688	19,472	13,641	30,569	4,407	--	--	--	--	--
Paper birch	3,430	--	1,013	--	2,417	--	--	--	--	--	--	--	--	--
Exotic	16,487	205	1,474	4,846	1,736	--	8,226	--	--	--	--	--	--	--
Nonstocked	63	--	--	63	--	--	--	--	--	--	--	--	--	--
All types	2,459,359	114,909	120,024	110,296	225,907	253,472	208,908	230,629	324,196	288,305	152,942	342,920	80,234	6,617

Table 37.--Net volume of sawtimber stock on commercial forest land by forest type and stand-age class, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	26,583	6,768	--	34	93	1,360	1	18,327	--	--	--	--	--	--
Red pine	99,744	258	5,081	15,758	13,561	65,086	--	--	--	--	--	--	--	--
White pine	112,728	--	--	5,432	--	26,382	--	25,346	55,568	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	5,147	--	--	--	5,147	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern	6,231	--	--	879	--	--	--	--	4,529	--	--	823	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	3,019,207	65,824	84,977	6,550	89,139	183,641	173,938	180,015	670,199	457,408	173,345	705,508	197,936	30,727
Elm-ash-soft maple	1,441,507	46,921	46,818	39,896	124,449	88,554	140,472	78,339	196,128	282,300	115,492	261,604	20,534	--
Maple-birch	2,933,921	136,803	136,365	106,552	155,577	151,490	220,159	336,184	313,892	409,358	334,514	472,532	160,495	--
Aspen	256,988	32,273	26,012	12,035	27,160	30,287	14,913	103,155	11,153	--	--	--	--	--
Paper birch	4,378	--	2,594	--	1,784	--	--	--	--	--	--	--	--	--
Exotic	39,101	--	--	1,599	2,175	--	35,327	--	--	--	--	--	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All types	7,945,535	288,847	301,847	188,735	419,085	546,800	584,810	741,366	1,251,469	1,149,066	623,351	1,440,467	378,965	30,727

[1/] International 1/4-inch rule.

Table 38.--Net volume of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)						
		0-10	11-20	21-30	31-40	41-50	51-60	61-70
Jack pine								
Sawtimber	5,245	--	--	--	--	--	--	--
Poletimber	3,985	--	--	--	--	--	--	2
Sapling & seedling	1,896	--	--	--	14	19	--	--
All stands	11,126	--	--	--	14	19	--	2
Red pine								
Sawtimber	18,641	--	--	--	--	--	--	--
Poletimber	23,264	--	--	--	--	--	--	2,998
Sapling & seedling	588	50	--	--	--	13	--	218
All stands	42,493	50	--	--	--	13	--	3,216
White pine								
Sawtimber	28,566	--	--	--	--	--	--	--
Poletimber	5,521	--	--	--	--	--	--	1,136
Sapling & seedling	531	--	--	531	--	--	--	--
All stands	34,618	--	--	531	--	--	--	1,136
Balsam fir								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
White spruce								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	4,288	--	--	--	--	--	--	1,083
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	4,288	--	--	--	--	--	--	1,083
Black spruce								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
Northern white-cedar								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	2,418	--	--	--	--	--	--	1,905
Sapling & seedling	1,910	222	206	--	--	--	--	--
All stands	4,328	222	206	--	--	--	--	1,905

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine							
Sawtimber	--	5,245	--	--	--	--	--
Poletimber	--	4	11	3,962	6	--	--
Sapling & seedling	1,829	--	--	--	34	--	--
All stands	1,829	5,249	11	3,962	40	--	--
Red pine							
Sawtimber	--	4,290	--	99	14,086	--	166
Poletimber	1,395	63	2	15,580	3,166	25	35
Sapling & seedling	--	307	--	--	--	--	--
All stands	1,395	4,660	2	15,679	17,252	25	201
White pine							
Sawtimber	--	--	--	5,139	--	23,427	--
Poletimber	--	--	--	--	4,385	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	5,139	4,385	23,427	--
Balsam fir							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
White spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	3,205	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	3,205	--	--	--	--	--
Black spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Northern white-cedar							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	513	--	--
Sapling & seedling	1,482	--	--	--	--	--	--
All stands	1,482	--	--	--	513	--	--

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70
Tamarack								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	1,018	--	--	--	1,018	--	--	--
All stands	1,018	--	--	--	1,018	--	--	--
Oak-hickory								
Sawtimber	607,844	--	--	2,317	1,706	7,959	39,305	32,782
Poletimber	208,117	--	7	--	--	6,548	19,912	24,290
Sapling & seedling	43,064	--	579	552	11,563	13,572	4,566	12,196
All stands	859,025	--	586	2,869	13,269	28,079	63,783	69,268
Elm-ash-soft maple								
Sawtimber	273,970	--	--	2,195	9,338	13,315	8,719	21,751
Poletimber	158,345	--	1,061	2,580	7,480	13,096	1,817	20,712
Sapling & seedling	41,184	412	466	1,137	14,202	6,949	6,563	5,423
All stands	473,499	412	1,527	5,912	31,020	33,360	17,099	47,886
Maple-birch								
Sawtimber	518,641	--	--	--	2,313	12,800	10,282	46,227
Poletimber	234,978	--	--	2,039	4,552	--	3,668	29,773
Sapling & seedling	125,117	686	6,090	6,492	17,676	14,281	7,949	30,614
All stands	878,736	686	6,090	8,531	24,541	27,081	21,899	106,614
Aspen								
Sawtimber	30,576	--	--	--	8	--	--	--
Poletimber	66,749	--	--	--	10,244	11,570	12,950	2,542
Sapling & seedling	32,923	434	161	2,432	563	11,831	3,198	3,364
All stands	130,248	434	161	2,432	10,815	23,401	16,148	5,906
Paper birch								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	2,417	--	--	--	--	--	--	--
Sapling & seedling	1,013	--	--	--	--	--	1,013	--
All stands	3,430	--	--	--	--	--	1,013	--
Exotic								
Sawtimber	8,226	--	--	--	--	--	--	--
Poletimber	6,093	--	--	--	--	--	1,736	--
Sapling & seedling	2,168	--	--	--	--	--	--	1,156
All stands	16,487	--	--	--	--	--	1,736	1,156
Nonstocked	63	--	--	63	--	--	--	--
All types								
Sawtimber	1,491,709	--	--	4,512	13,365	34,074	58,306	100,760
Poletimber	716,175	--	1,068	4,619	22,276	31,214	40,083	84,441
Sapling & seedling	251,412	1,804	7,502	11,144	45,036	46,665	23,289	52,971
Nonstocked	63	--	--	63	--	--	--	--
All stands	2,459,359	1,804	8,570	20,338	80,677	111,953	121,678	238,172

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Oak-hickory							
Sawtimber	60,105	57,514	46,717	145,492	182,610	31,337	--
Poletimber	33,739	22,802	28,487	38,497	19,830	--	14,005
Sapling & seedling	--	20	16	--	--	--	--
All stands	93,844	80,336	75,220	183,989	202,440	31,337	14,005
Elm-ash-soft maple							
Sawtimber	40,921	30,652	10,100	60,956	64,666	11,357	--
Poletimber	36,292	13,047	45,047	16,962	251	--	--
Sapling & seedling	6,032	--	--	--	--	--	--
All stands	83,245	43,699	55,147	77,918	64,917	11,357	--
Maple-birch							
Sawtimber	63,932	51,911	97,141	69,163	130,537	34,335	--
Poletimber	42,420	31,185	49,550	50,583	21,208	--	--
Sapling & seedling	14,829	15,272	5,788	3,325	2,115	--	--
All stands	121,181	98,368	152,479	123,071	153,860	34,335	--
Aspen							
Sawtimber	--	--	14,217	--	16,351	--	--
Poletimber	20,038	266	--	--	9,139	--	--
Sapling & seedling	742	3,086	7,112	--	--	--	--
All stands	20,780	3,352	21,329	--	25,490	--	--
Paper birch							
Sawtimber	--	--	--	--	--	--	--
Poletimber	2,417	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	2,417	--	--	--	--	--	--
Exotic							
Sawtimber	--	--	--	8,226	--	--	--
Poletimber	--	--	--	--	4,357	--	--
Sapling & seedling	1,012	--	--	--	--	--	--
All stands	1,012	--	--	8,226	4,357	--	--
Nonstocked	--	--	--	--	--	--	--
All types							
Sawtimber	164,958	149,612	168,175	289,075	408,250	100,456	166
Poletimber	136,301	70,572	123,097	125,584	62,855	25	14,040
Sapling & seedling	25,926	18,685	12,916	3,325	2,149	--	--
Nonstocked	--	--	--	--	--	--	--
All stands	327,185	238,869	304,188	417,984	473,254	100,481	14,206

Table 39.--Net volume of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Southern Upper Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)						
		0-10	11-20	21-30	31-40	41-50	51-60	61-70
Jack pine								
Sawtimber	18,326	--	--	--	--	--	--	--
Poletimber	1,367	--	--	--	--	--	--	--
Sapling & seedling	6,890	--	--	--	31	--	--	--
All stands	26,583	--	--	--	31	--	--	--
Red pine								
Sawtimber	63,087	--	--	--	--	--	--	--
Poletimber	34,683	--	--	--	--	--	--	4,192
Sapling & seedling	1,974	258	--	--	--	37	--	850
All stands	99,744	258	--	--	--	37	--	5,042
White pine								
Sawtimber	106,349	--	--	--	--	--	--	--
Poletimber	3,778	--	--	--	--	--	--	2,832
Sapling & seedling	2,601	--	--	2,601	--	--	--	--
All stands	112,728	--	--	2,601	--	--	--	2,832
Balsam fir								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
White spruce								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	5,147	--	--	--	--	--	--	538
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	5,147	--	--	--	--	--	--	538
Black spruce								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
Northern white-cedar								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	5,352	--	--	--	--	--	--	4,529
Sapling & seedling	879	--	--	--	--	--	--	--
All stands	6,231	--	--	--	--	--	--	4,529

(Table 39 continued on next page)

[1/]International 1/4-inch

(Table 39 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine							
Sawtimber	--	18,326	--	--	--	--	--
Poletimber	--	2	14	1,341	10	--	--
Sapling & seedling	6,859	--	--	--	--	--	--
All stands	6,859	18,328	14	1,341	10	--	--
Red pine							
Sawtimber	--	10,032	--	455	51,881	--	719
Poletimber	3,373	39	--	24,788	2,206	43	42
Sapling & seedling	--	829	--	--	--	--	--
All stands	3,373	10,900	--	25,243	54,087	43	761
White pine							
Sawtimber	--	--	--	25,435	--	80,914	--
Poletimber	--	--	--	--	946	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	25,435	946	80,914	--
Balsam fir							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
White spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	4,609	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	4,609	--	--	--	--	--
Black spruce							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Northern white-cedar							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	823	--	--
Sapling & seedling	879	--	--	--	--	--	--
All stands	879	--	--	--	823	--	--

(Table 39 continued on next page)

(Table 39 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70
Tamarack								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
Oak-hickory								
Sawtimber	2,473,467	--	--	10,146	5,071	26,322	172,184	139,713
Poletimber	395,067	--	12	--	--	15,047	24,693	45,008
Sapling & seedling	150,673	--	1,928	1,683	38,936	47,988	15,550	44,519
All stands	3,019,207	--	1,940	11,829	44,007	89,357	212,427	229,240
Elm-ash-soft maple								
Sawtimber	1,050,217	--	--	9,966	40,391	48,295	30,167	84,423
Poletimber	292,885	--	1,302	2,502	18,822	17,405	3,151	38,977
Sapling & seedling	98,405	1,912	1,001	1,379	24,854	22,814	8,602	16,399
All stands	1,441,507	1,912	2,303	13,847	84,067	88,514	41,920	139,799
Maple-birch								
Sawtimber	2,133,534	--	--	--	9,370	50,563	46,953	180,151
Poletimber	490,233	--	--	2,098	8,855	--	8,817	57,492
Sapling & seedling	310,154	2,786	16,474	15,870	40,705	30,212	13,025	59,094
All stands	2,933,921	2,786	16,474	17,968	58,930	80,775	68,795	296,737
Aspen								
Sawtimber	103,185	--	--	--	30	--	--	--
Poletimber	95,518	--	--	--	13,599	16,948	19,776	1,807
Sapling & seedling	58,285	2,239	--	9,869	--	18,431	10,366	4,413
All stands	256,988	2,239	--	9,869	13,629	35,379	30,142	6,220
Paper birch								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	1,784	--	--	--	--	--	--	--
Sapling & seedling	2,594	--	--	--	--	--	2,594	--
All stands	4,378	--	--	--	--	--	2,594	--
Exotic								
Sawtimber	35,326	--	--	--	--	--	--	--
Poletimber	3,775	--	--	--	--	--	2,176	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	39,101	--	--	--	--	--	2,176	--
Nonstocked	--	--	--	--	--	--	--	--
All types								
Sawtimber	5,983,491	--	--	20,112	54,862	125,180	249,304	404,287
Poletimber	1,329,589	--	1,314	4,600	41,276	49,400	58,613	155,375
Sapling & seedling	632,455	7,195	19,403	31,402	104,526	119,482	50,137	125,275
Nonstocked	--	--	--	--	--	--	--	--
All stands	7,945,535	7,195	20,717	56,114	200,664	294,062	358,054	684,937

(Table 39 continued on next page)

(Table 39 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Oak-hickory							
Sawtimber	266,041	229,423	201,782	574,951	713,864	133,970	--
Poletimber	70,461	44,650	44,826	75,915	45,227	--	29,228
Sapling & seedling	--	29	40	--	--	--	--
All stands	336,502	274,102	246,648	650,866	759,091	133,970	29,228
Elm-ash-soft maple							
Sawtimber	138,870	127,257	46,882	249,249	248,101	26,616	--
Poletimber	70,148	37,039	75,525	27,289	725	--	--
Sapling & seedling	21,444	--	--	--	--	--	--
All stands	230,462	164,296	122,407	276,538	248,826	26,616	--
Maple-birch							
Sawtimber	244,126	222,835	414,619	295,929	537,827	131,161	--
Poletimber	83,021	71,503	119,888	108,216	30,343	--	--
Sapling & seedling	56,617	54,620	14,371	4,281	2,099	--	--
All stands	383,764	348,958	548,878	408,426	570,269	131,161	--
Aspen							
Sawtimber	--	--	49,754	--	53,401	--	--
Poletimber	28,475	683	--	--	14,230	--	--
Sapling & seedling	818	7,903	4,246	--	--	--	--
All stands	29,293	8,586	54,000	--	67,631	--	--
Paper birch							
Sawtimber	--	--	--	--	--	--	--
Poletimber	1,784	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	1,784	--	--	--	--	--	--
Exotic							
Sawtimber	--	--	--	35,326	--	--	--
Poletimber	--	--	--	--	1,599	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	35,326	1,599	--	--
Nonstocked	--	--	--	--	--	--	--
All types							
Sawtimber	649,037	607,873	713,037	1,181,345	1,605,074	372,661	719
Poletimber	257,262	158,525	240,253	237,549	96,109	43	29,270
Sapling & seedling	86,617	63,381	18,657	4,281	2,099	--	--
Nonstocked	--	--	--	--	--	--	--
All stands	992,916	829,779	971,947	1,423,175	1,703,282	372,704	29,989

Table 40.--Net volume of sawtimber on commercial forest land by species group and log-grade class, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All grades	Log grade 1	2	3	Tie and timber
SOFTWOODS					
White pine	278,683	22,069	35,189	176,217	45,208
Red pine	109,427	1,141	1,093	102,819	4,374
Jack pine	29,599	--	296	29,007	296
White spruce	538	--	--	538	--
Black spruce	--	--	--	--	--
Balsam fir	708	--	--	687	21
Hemlock	31,329	--	3,087	28,242	--
Tamarack	7,030	773	2,742	3,515	--
Northern white-cedar	4,699	--	--	4,699	--
Other softwoods	56,844	--	--	56,844	--
Total	518,857	23,983	42,407	402,568	49,899
HARDWOODS					
Select white oaks	1,214,549	86,843	289,668	653,576	184,462
Select red oaks	1,379,437	112,759	342,497	744,043	180,138
Other red oaks	443,062	54,921	100,525	213,096	74,520
Hickory	325,984	11,058	72,332	205,048	37,546
Yellow birch	21,552	22	9,812	11,289	429
Hard Maple	433,065	35,423	129,563	236,051	32,028
Soft maple	1,247,401	160,884	265,332	774,269	46,916
Beech	196,968	5,952	25,754	142,037	23,225
Ash	615,313	108,010	158,222	328,601	20,480
Balsam poplar	26,420	5,177	3,246	15,373	2624
Cottonwood	246,169	53,572	49,894	138,464	4,239
Bigtooth aspen	149,001	7	20,153	123,955	4,886
Quaking aspen	95,703	--	11,470	74,263	9,970
Basswood	300,860	83,399	80,151	131,068	6,242
Yellow-poplar	87,069	25,987	20,980	38,059	2,043
Black walnut	84,707	4,713	1,043	67,999	10,952
Black cherry	274,808	21,000	1,432	230,621	21,755
Butternut	7,525	--	--	7,525	--
Elm	68,490	3,862	13,623	41,196	9,809
Paper birch	12,825	--	--	11,799	1,026
Other hardwoods	195,770	14,443	24,317	124,349	32,661
Total	7,426,678	788,032	1,620,014	4,312,681	705,951
All species	7,945,535	812,015	1,662,421	4,715,249	755,850

[1/]International 1/4-inch rule.

Table 41.--Net volume of short-log trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
White pine	492	308	184	--	--	--	--	--	--	--	--
Red pine	183	183	--	--	--	--	--	--	--	--	--
Jack pine	1	1	--	--	--	--	--	--	--	--	--
White spruce	98	98	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	141	141	--	--	--	--	--	--	--	--	--
Other softwoods	382	227	155	--	--	--	--	--	--	--	--
Total	1,297	958	339	--	--	--	--	--	--	--	--
HARDWOODS											
Select white oaks	2,755	--	795	897	--	--	284	--	556	223	--
Select red oaks	2,419	--	199	203	214	--	600	729	474	--	--
Other red oaks	1,826	--	745	23	14	221	64	--	229	530	--
Hickory	1,155	--	172	283	250	202	--	248	--	--	--
Yellow birch	632	--	377	255	--	--	--	--	--	--	--
Hard maple	1,780	--	--	133	108	219	552	--	483	--	285
Soft maple	4,465	--	489	164	1,117	196	292	164	687	748	608
Beech	1,850	--	200	411	--	--	262	225	553	199	--
Ash	3,485	--	439	983	--	495	207	569	792	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	--	--	--
Basswood	141	--	--	--	141	--	--	--	--	--	--
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--
Black walnut	288	--	--	--	--	--	--	--	--	288	--
Black cherry	2,349	--	1,372	213	535	229	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--
Elm	191	--	113	78	--	--	--	--	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	2,022	--	646	603	102	--	--	--	--	334	337
Total	25,358	--	5,547	4,246	2,481	1,562	2,261	1,935	3,774	2,322	1,230
All species	26,655	958	5,886	4,246	2,481	1,562	2,261	1,935	3,774	2,322	1,230

Table 42.--Net volume of short-log trees on commercial forest land by species group and diameter class, Southern Lower Peninsula, Michigan, 1980

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 28.9	29.0- 38.9	39.0+
SOFTWOODS											
White pine	2,419	1,608	811	--	--	--	--	--	--	--	--
Red pine	742	742	--	--	--	--	--	--	--	--	--
Jack pine	8	8	--	--	--	--	--	--	--	--	--
White spruce	550	550	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	2,188	1,321	867	--	--	--	--	--	--	--	--
Total	5,907	4,229	1,678	--	--	--	--	--	--	--	--
HARDWOODS											
Select white oaks	8,434	--	2,408	2,966	--	--	722	--	1,364	974	--
Select red oaks	6,708	--	557	564	574	--	1,809	1,938	1,266	--	--
Other red oaks	5,645	--	2,792	70	36	614	184	--	599	1,350	--
Hickory	3,635	--	1,062	797	282	791	--	703	--	--	--
Yellow birch	2,434	--	1,641	793	--	--	--	--	--	--	--
Hard maple	5,160	--	--	648	63	2,112	1,285	--	596	--	456
Soft maple	13,056	--	1,313	198	2,790	592	829	641	2,034	2,266	2,393
Beech	6,019	--	556	1,092	--	--	609	588	1,506	1,668	--
Ash	9,328	--	1,373	2,301	--	1,468	587	2,045	1,554	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	--	--	--
Basswood	993	--	--	--	993	--	--	--	--	--	--
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--
Black walnut	246	--	--	--	--	--	--	--	--	246	--
Black cherry	6,446	--	4,410	121	1,335	580	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--
Elm	731	--	536	195	--	--	--	--	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	5,082	--	2,173	1,224	162	--	--	--	--	759	764
Total	73,917	--	18,821	10,969	6,235	6,157	6,025	5,915	8,919	7,263	3,613
All species	79,824	4,229	20,499	10,969	6,235	6,157	6,025	5,915	8,919	7,263	3,613

[1/]International 1/4-inch rule.

Table 43.--Net annual growth of growing stock on commercial forest land by softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1965[1/] and 1979

(In million cubic feet)

Species	1965[1/]	1979
Softwoods	5.7	8.7
Hardwoods	63.2	79.1
All species	68.9	87.8

1/Figures have been adjusted from those published after the 1965 survey to conform to 1979 volumes because of changes in survey definitions and procedures.

Table 44.--Net annual growth of growing stock on commercial forest land by species group and county, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	All counties	County										
		Allegan	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	2,766	684	--	--	--	--	--	--	--	--	84	--
Red pine	3,181	675	165	--	--	80	--	--	--	--	--	--
Jack pine	586	304	--	--	--	--	--	--	--	--	--	--
White spruce	507	--	418	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	6	--	--	--	--	--	--	--	--	--	--	--
Hemlock	104	4	--	--	--	--	--	--	--	--	--	--
Tamarack	39	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	247	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	1,256	312	89	--	2	36	47	--	26	--	--	--
Total	8,692	1,979	672	--	2	116	47	--	26	--	84	--
HARDWOODS												
Select white oaks	6,892	632	478	35	165	178	172	27	81	122	72	15
Select red oaks	9,190	550	852	358	25	15	109	146	27	163	139	4
Other red oaks	3,823	575	190	130	--	74	--	9	--	--	80	--
Hickory	2,821	52	210	35	39	109	57	113	134	36	--	7
Yellow birch	186	18	23	10	--	3	68	--	--	--	--	--
Hard maple	3,162	26	260	282	22	25	32	31	224	78	29	79
Soft maple	18,397	902	1,274	484	658	805	513	284	190	212	247	94
Beech	605	25	-3	16	--	3	--	--	106	22	--	--
Ash	11,900	260	504	375	574	408	159	72	682	331	317	411
Balsam poplar	245	--	--	21	--	--	--	--	--	--	--	--
Cottonwood	2,157	3	23	169	20	13	7	5	7	36	--	14
Bigtooth aspen	3,638	640	96	38	37	117	--	226	11	49	57	--
Quaking aspen	4,906	54	31	--	--	100	30	--	--	68	10	--
Basswood	2,892	12	109	44	52	515	87	66	187	90	17	27
Yellow-poplar	400	38	--	129	--	133	11	--	--	--	--	--
Black walnut	793	--	--	--	6	--	81	47	32	7	--	265
Black cherry	6,856	733	788	570	139	489	441	20	21	288	--	52
Butternut	92	--	--	16	5	8	23	--	8	--	--	--
Elm	-3,351	10	-220	-461	-294	-167	-332	-50	-230	-96	-16	-129
Paper birch	713	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	2,795	110	49	179	14	28	45	--	57	--	10	41
Total	79,112	4,640	4,664	2,430	1,462	2,856	1,503	996	1,537	1,406	962	880
All species	87,804	6,619	5,336	2,430	1,464	2,972	1,550	996	1,563	1,406	1,046	880

(Table 44 continued on next page)

(Table 44 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	11	--	--	53	42	--	--	--	--	--	440
Red pine	--	--	--	--	214	23	274	--	255	--	--	229
Jack pine	--	--	--	--	--	--	4	--	--	--	--	28
White spruce	--	21	--	--	33	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	6	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	17
Tamarack	-1	--	3	--	--	-2	--	--	--	-10	--	43
Northern white-cedar	--	--	--	--	--	--	--	--	--	16	--	5
Other softwoods	--	--	--	125	258	44	--	--	60	--	--	--
Total	-1	32	3	125	558	107	284	--	315	6	--	762
HARDWOODS												
Select white oaks	--	107	19	284	17	328	231	103	310	90	139	444
Select red oaks	--	73	170	403	94	505	217	63	608	10	120	988
Other red oaks	--	2	8	250	94	767	8	--	65	--	67	98
Hickory	--	63	8	379	54	36	95	118	145	16	142	35
Yellow birch	--	--	--	3	15	--	8	--	--	2	--	--
Hard maple	--	77	24	--	13	318	123	160	--	191	18	248
Soft maple	177	131	97	186	234	1,140	964	810	831	324	89	1,289
Beech	--	24	42	--	20	15	6	--	--	14	--	31
Ash	362	241	72	314	159	684	174	354	105	31	240	549
Balsam poplar	17	14	--	--	--	--	16	--	--	--	--	--
Cottonwood	400	123	--	17	12	--	94	238	--	27	225	--
Bigtooth aspen	--	16	103	94	140	174	23	20	50	--	--	455
Quaking aspen	644	-43	55	--	10	157	754	14	--	189	--	348
Basswood	27	91	42	159	4	92	80	156	14	21	111	33
Yellow-poplar	--	--	--	--	50	--	--	--	--	--	--	--
Black walnut	--	--	32	10	--	--	--	50	--	--	63	--
Black cherry	63	97	124	444	201	321	37	75	324	4	81	100
Butternut	--	--	--	--	--	27	--	--	--	--	--	--
Elm	187	-80	78	-81	88	-262	72	-63	-17	-85	-117	-337
Paper birch	120	--	--	--	--	--	26	--	--	--	--	91
Other hardwoods	86	58	42	304	44	174	--	3	9	47	20	128
Total	2,083	994	916	2,766	1,249	4,476	2,928	2,101	2,444	881	1,198	4,500
All species	2,082	1,026	919	2,891	1,807	4,583	3,212	2,101	2,759	887	1,198	5,262

(Table 44 continued on next page)

(Table 44 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	723	14	172	23	268	22	--	--	20	210	--	--
Red pine	746	38	462	--	--	--	--	--	--	20	--	--
Jack pine	181	--	69	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	35	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	49	--	16	--	11	--	--	--	7	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	6	--
Northern white-cedar	1	--	--	--	--	--	--	--	225	--	--	--
Other softwoods	--	--	181	17	36	11	--	--	--	12	--	--
Total	1,700	52	900	40	315	68	--	--	252	242	6	--
HARDWOODS												
Select white oaks	454	199	185	362	435	53	7	332	43	97	463	213
Select red oaks	984	342	402	76	327	290	10	264	96	412	122	226
Other red oaks	566	87	87	52	--	58	--	11	--	78	467	--
Hickory	7	91	9	55	71	271	--	86	6	93	228	21
Yellow birch	7	--	14	--	6	--	--	--	4	5	--	--
Hard maple	4	19	81	49	118	21	--	52	193	69	294	2
Soft maple	1,348	300	561	366	277	381	48	538	1,016	979	386	262
Beech	199	25	9	--	11	--	4	23	10	1	14	-12
Ash	323	315	144	259	819	150	479	858	203	647	184	141
Balsam poplar	--	19	--	9	--	--	65	--	84	--	--	--
Cottonwood	--	15	41	52	291	--	53	86	86	24	39	37
Bigtooth aspen	556	18	77	59	21	225	7	36	150	106	17	20
Quaking aspen	102	83	179	395	410	14	248	28	985	16	11	14
Basswood	1	233	40	6	124	25	31	113	119	34	39	91
Yellow-poplar	--	--	--	--	--	32	--	--	--	7	--	--
Black walnut	--	11	--	--	--	129	--	--	4	14	42	--
Black cherry	61	216	48	44	150	180	20	129	-31	346	281	--
Butternut	--	--	--	--	--	--	--	--	5	--	--	--
Elm	120	-40	-125	-50	-141	-105	-26	-196	-59	-154	138	-111
Paper birch	6	--	--	255	--	--	147	--	68	--	--	--
Other hardwoods	439	11	52	322	2	19	12	41	--	155	255	39
Total	5,177	1,944	1,804	2,311	2,921	1,743	1,105	2,401	2,982	2,929	2,980	943
All species	6,877	1,996	2,704	2,351	3,236	1,811	1,105	2,401	3,234	3,171	2,986	943

Table 45.--Net annual growth of sawtimber on commercial forest land by species group and county, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Species group	All counties	County										
		Allegan	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	17,855	4,497	--	--	--	--	--	--	--	--	116	--
Red pine	7,824	206	487	--	--	--	--	--	--	--	--	--
Jack pine	3,034	--	--	--	--	--	--	--	--	--	--	--
White spruce	73	--	73	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	34	--	--	--	--	--	--	--	--	--	--	--
Hemlock	501	15	--	--	--	--	--	--	--	--	--	--
Tamarack	27	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	208	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	5,058	1,114	--	--	12	237	--	--	--	--	--	--
Total	34,614	5,832	560	--	12	237	--	--	--	--	116	--
HARDWOODS												
Select white oaks	41,911	3,305	1,160	132	898	1,059	255	86	389	779	281	70
Select red oaks	54,556	2,390	4,866	1,799	57	91	495	377	108	869	1,462	18
Other red oaks	18,922	547	1,283	375	--	376	--	54	--	--	208	--
Hickory	14,894	1,496	1,724	18	115	543	185	--	1,555	62	--	127
Yellow birch	610	--	--	64	--	15	330	--	--	--	--	--
Hard maple	13,659	108	723	449	-5	36	158	42	1,962	332	86	368
Soft maple	56,995	3,432	1,415	845	3,712	2,101	1,663	3,236	612	1,155	764	236
Beech	2,231	-14	7	13	--	-4	-29	--	445	34	--	--
Ash	27,301	1,877	317	-258	515	2,553	294	1,471	779	1,178	291	723
Balsam poplar	1,808	--	--	31	--	--	--	--	--	--	--	--
Cottonwood	8,481	13	125	689	98	73	38	27	33	196	--	69
Bigtooth aspen	10,950	1,378	164	37	79	659	--	57	77	--	147	--
Quaking aspen	8,283	107	--	--	--	91	--	--	--	--	38	--
Basswood	7,500	70	505	210	88	1,357	252	--	328	64	68	151
Yellow-poplar	737	60	--	289	--	--	15	--	--	--	--	--
Black walnut	2,089	--	--	--	15	--	113	171	--	-2	--	18
Black cherry	20,384	4,040	1,159	2,572	305	1,416	742	--	--	--	--	--
Butternut	113	--	--	--	--	36	--	--	--	--	--	--
Elm	-1,995	-702	-295	460	-236	-153	-567	-19	708	-149	--	-181
Paper birch	524	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	7,688	304	-4	881	--	95	24	--	159	--	51	--
Total	297,641	18,411	13,149	8,606	5,641	10,344	3,968	5,502	7,155	4,518	3,396	1,599
All species	332,255	24,243	13,709	8,606	5,653	10,581	3,968	5,502	7,155	4,518	3,512	1,599

(Table 45 continued on next page)

(Table 45 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	56	--	--	384	202	--	--	--	--	--	1,956
Red pine	--	--	--	--	585	149	--	--	1,070	--	--	468
Jack pine	--	--	--	--	--	--	18	--	--	--	--	2
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	34	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	103
Tamarack	--	--	--	--	--	--	--	--	--	-36	--	16
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	13
Other softwoods	--	--	--	--	1,821	91	--	--	340	--	--	--
Total	--	56	--	--	2,790	442	52	--	1,410	-36	--	2,558
HARDWOODS												
Select white oaks	--	1,620	77	2,068	115	2,630	1,288	625	1,838	633	1,790	4,015
Select red oaks	--	406	1,082	1,648	886	1,427	1,987	211	5,363	40	683	3,455
Other red oaks	--	11	52	1,739	378	5,445	--	--	284	--	399	863
Hickory	--	284	--	1,474	48	118	56	780	2,859	102	351	118
Yellow birch	--	--	--	20	--	--	--	--	--	15	--	--
Hard maple	--	449	33	--	--	1,400	397	2,531	--	678	108	23
Soft maple	35	589	132	396	376	3,615	5,877	208	1,174	930	395	3,304
Beech	--	250	10	--	156	108	5	-5	--	50	--	-12
Ash	358	627	154	485	13	475	363	759	394	112	61	980
Balsam poplar	61	--	--	--	--	--	1,625	--	--	--	--	-8
Cottonwood	2,727	619	--	82	64	--	--	51	--	107	642	--
Bigtooth aspen	--	17	123	279	195	--	--	76	148	--	--	4,072
Quaking aspen	1,507	311	--	--	--	--	39	33	--	--	--	1,550
Basswood	227	244	153	104	--	358	221	179	77	92	152	111
Yellow-poplar	--	--	--	--	231	--	--	--	--	--	--	--
Black walnut	--	--	--	54	--	--	--	--	--	--	57	--
Black cherry	139	1	72	2,963	424	269	--	98	98	33	178	2
Butternut	--	--	--	--	--	68	--	--	--	--	--	--
Elm	52	298	--	-16	--	-621	--	-113	--	--	--	348
Paper birch	50	--	--	--	--	--	14	--	--	--	--	28
Other hardwoods	--	52	33	106	190	33	--	--	47	1,354	90	1,640
Total	5,156	5,778	1,921	11,402	3,076	15,325	11,872	5,433	12,282	4,146	4,906	20,489
All species	5,156	5,834	1,921	11,402	5,866	15,767	11,924	5,433	13,692	4,110	4,906	23,047

(Table continued on next page)

(Table 45 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	6,539	79	1,622	133	1,461	132	--	--	112	566	--	--
Red pine	3,331	114	1,414	--	--	--	--	--	--	--	--	--
Jack pine	1,941	--	1,073	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	276	--	43	--	64	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	47	--
Northern white-cedar	2	--	--	--	--	--	--	--	193	--	--	--
Other softwoods	--	--	1,443	--	--	--	--	--	--	--	--	--
Total	12,089	193	5,595	133	1,525	132	--	--	305	566	47	--
HARDWOODS												
Select white oaks	1,810	1,187	747	1,522	3,497	239	40	2,012	174	412	3,877	1,281
Select red oaks	4,075	1,918	4,275	403	3,590	2,892	--	2,443	406	1,462	782	2,587
Other red oaks	3,413	503	325	1,303	--	492	--	70	--	483	319	--
Hickory	--	503	68	175	--	584	--	513	46	175	709	106
Yellow birch	--	--	63	--	34	--	--	--	69	--	--	--
Hard maple	1	68	231	259	168	--	--	2,139	670	152	84	9
Soft maple	2,774	1,238	3,368	1,049	892	2,631	166	1,635	4,361	1,302	1,046	331
Beech	865	175	25	--	-16	--	30	138	66	-13	17	-70
Ash	183	862	296	1,500	4,357	393	297	1,784	321	642	448	1,697
Balsam poplar	--	11	--	9	--	--	33	--	46	--	--	--
Cottonwood	--	--	246	157	1,125	--	150	574	401	124	51	--
Bigtooth aspen	2,008	--	--	196	--	764	55	272	89	58	--	--
Quaking aspen	166	144	--	19	152	--	2,874	53	1,146	--	53	--
Basswood	2	390	230	37	309	120	--	257	613	162	160	209
Yellow-poplar	--	--	--	--	--	109	--	--	--	33	--	--
Black walnut	--	--	--	--	--	1,547	--	--	7	--	109	--
Black cherry	94	176	4	--	?,329	252	--	342	-34	1,301	1,409	--
Butternut	--	--	--	--	--	--	--	--	9	--	--	--
Elm	2	--	-402	--	-30	--	--	-12	43	-727	660	-343
Paper birch	15	--	--	--	--	--	62	--	355	--	--	--
Other hardwoods	67	--	254	131	--	--	64	299	--	1,320	376	122
Total	15,475	7,175	9,730	6,760	16,407	10,023	3,771	12,519	8,788	6,886	10,100	5,929
All species	27,564	7,368	15,325	6,893	17,932	10,155	3,771	12,519	9,093	7,452	10,147	5,929

Table 46.--Net annual growth of growing stock on commercial forest land by species group and ownership class, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
SOFTWOODS											
White pine	2,766	6	--	--	--	380	78	--	571	109	1,622
Red pine	3,181	93	--	--	--	1,080	576	--	38	359	1,035
Jack pine	586	15	--	--	--	321	30	--	--	16	204
White spruce	507	--	--	--	--	--	--	--	56	--	451
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	6	--	--	--	--	6	--	--	--	--	--
Hemlock	104	1	--	--	--	11	41	--	7	8	36
Tamarack	39	--	--	--	--	5	--	--	-1	33	2
Northern white-cedar	247	2	--	--	--	4	--	--	237	--	4
Other softwoods	1,256	--	--	--	--	--	--	--	141	122	993
Total	8,692	117	--	--	--	1,807	725	--	1,049	647	4,347
HARDWOODS											
Select white oak	6,892	51	--	94	--	733	54	--	3,196	162	2,602
Select red oaks	9,190	17	--	--	--	773	327	--	3,404	679	3,990
Other red oaks	3,823	72	--	--	--	418	18	--	1,270	188	1,857
Hickory	2,821	--	--	--	--	215	26	--	1,644	35	901
Yellow birch	186	--	--	--	--	14	--	--	52	7	113
Hard maple	3,162	1	--	--	--	35	13	--	2,077	99	937
Soft maple	18,397	33	--	16	--	1,224	147	--	9,391	1,444	6,142
Beech	605	--	--	--	--	6	--	--	271	199	129
Ash	11,900	2	--	--	--	340	72	--	7,442	344	3,700
Balsam poplar	245	--	--	--	--	--	--	--	230	--	15
Cottonwood	2,157	--	--	--	--	42	--	--	1,394	175	546
Bigtooth aspen	3,638	9	--	--	--	713	67	--	839	14	1,996
Quaking aspen	4,906	-3	--	--	--	331	44	--	2,761	249	1,524
Basswood	2,892	3	--	--	--	12	35	--	1,702	90	1,050
Yellow-poplar	400	--	--	--	--	--	--	--	174	3	223
Black walnut	793	--	--	--	--	--	--	--	300	11	482
Black cherry	6,856	4	--	--	--	913	288	--	3,143	244	2,264
Butternut	92	--	--	--	--	--	8	--	46	7	31
Elm	-3,351	2	--	--	--	-37	-40	--	-1,585	-311	-1,380
Paper birch	713	2	--	--	--	40	--	--	407	5	259
Other hardwoods	2,795	--	--	--	--	75	63	--	1,039	123	1,495
Total	79,112	193	--	110	--	5,847	1,122	--	39,197	3,767	28,876
All species	87,804	310	--	110	--	7,654	1,847	--	40,246	4,414	33,223

Table 47.--Net annual growth of sawtimber on commercial forest land by species group and ownership class, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Species group	All owners	Ownership class									
		National Forest	Bureau of Land Mgmt.	Misc. federal	Indian	State	County & municipal	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
SOFTWOODS											
White pine	17,855	33	--	--	--	3,035	203	--	2,693	590	11,301
Red pine	7,824	209	--	--	--	2,327	2,578	--	114	370	2,226
Jack pine	3,034	30	--	--	--	18	--	--	--	--	2,986
White spruce	73	--	--	--	--	--	--	--	--	--	73
Black spruce	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	34	--	--	--	--	34	--	--	--	--	--
Hemlock	501	3	--	--	--	64	250	--	--	23	161
Tamarack	27	--	--	--	--	17	--	--	10	--	--
Northern white-cedar	208	7	--	--	--	9	--	--	94	--	98
Other softwoods	5,058	--	--	--	--	--	--	--	1,132	276	3,650
Total	34,614	282	--	--	--	5,504	3,031	--	4,043	1,259	20,495
HARDWOODS											
Select white oaks	41,911	261	--	591	--	5,518	91	--	21,425	754	13,271
Select red oaks	54,556	64	--	--	--	5,692	2,177	--	22,725	3,152	20,746
Other red oaks	18,922	369	--	--	--	1,231	--	--	4,885	1,176	11,261
Hickory	14,894	--	--	--	--	1,582	26	--	8,608	57	4,621
Yellow birch	610	--	--	--	--	--	--	--	164	--	446
Hard maple	13,659	1	--	--	--	129	--	--	8,631	336	4,562
Soft maple	56,995	97	--	219	--	6,299	295	--	24,339	4,113	21,633
Beech	2,231	--	--	--	--	--	--	--	1,022	878	331
Ash	27,301	8	--	--	--	327	313	--	16,271	736	9,646
Balsam poplar	1,808	--	--	--	--	--	--	--	1,799	--	9
Cottonwood	8,481	--	--	--	--	176	--	--	6,234	416	1,655
Bigtooth aspen	10,950	25	--	--	--	160	136	--	6,552	--	4,077
Quaking aspen	8,283	23	--	--	--	662	59	--	5,766	28	1,745
Basswood	7,500	5	--	--	--	70	43	--	3,964	496	2,922
Yellow-poplar	737	--	--	--	--	--	--	--	549	-5	193
Black walnut	2,089	--	--	--	--	--	--	--	380	--	1,709
Black cherry	20,384	15	--	--	--	3,046	--	--	9,487	661	7,175
Butternut	113	--	--	--	--	--	36	--	9	68	--
Elm	-1,995	2	--	--	--	617	--	--	59	200	-2,873
Paper birch	524	16	--	--	--	13	--	--	495	--	--
Other hardwoods	7,688	--	--	--	--	--	1,476	--	3,059	289	2,864
Total	297,641	886	--	810	--	25,522	4,652	--	146,423	13,355	105,993
All species	332,255	1,168	--	810	--	31,026	7,683	--	150,466	14,614	126,488

[1/]International 1/4-inch rule.

Table 48.--Net annual growth of growing stock on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	All types	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
SOFTWOODS								
White pine	2,766	--	121	941	--	--	--	9
Red pine	3,181	--	2,485	116	--	--	--	--
Jack pine	586	442	68	--	--	--	--	--
White spruce	507	--	--	--	--	452	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	6	--	6	--	--	--	--	--
Hemlock	104	--	--	--	--	--	--	--
Tamarack	39	--	--	--	--	--	--	5
Northern white-cedar	247	--	--	--	--	--	--	225
Other softwoods	1,256	--	21	55	--	68	--	--
Total	8,692	442	2,701	1,112	--	520	--	239
HARDWOODS					--			
Select white oaks	6,892	--	17	1	--	--	--	--
Select red oaks	9,190	126	12	49	--	--	--	--
Other red oaks	3,823	1	--	--	--	--	--	--
Hickory	2,821	7	--	--	--	--	--	--
Yellow birch	186	--	--	--	--	--	--	7
Hard maple	3,162	--	--	--	--	--	--	51
Soft maple	18,397	43	1	13	--	--	--	--
Beech	605	--	--	--	--	--	--	--
Ash	11,900	--	--	--	--	--	--	25
Balsam poplar	245	--	--	--	--	--	--	--
Cottonwood	2,157	--	--	--	--	--	--	--
Bigtooth aspen	3,638	--	8	--	--	--	--	--
Quaking aspen	4,906	--	-5	--	--	--	--	113
Basswood	2,892	--	--	--	--	--	--	19
Yellow-poplar	400	--	23	--	--	--	--	--
Black walnut	793	--	--	--	--	--	--	--
Black cherry	6,856	--	--	390	--	55	--	--
Butternut	92	--	--	--	--	--	--	5
Elm	-3,351	--	--	--	--	--	--	5
Paper birch	713	--	--	--	--	--	--	4
Other hardwoods	2,795	7	--	--	--	--	--	--
Total	79,112	184	56	453	--	55	--	229
All species	87,804	626	2,757	1,565	--	575	--	468

(Table 48 continued on next page)

(Table 48 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS								
White pine	--	485	50	883	199	--	78	--
Red pine	--	206	50	174	89	--	61	--
Jack pine	--	70	--	--	--	--	6	--
White spruce	--	34	--	21	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--
Hemlock	--	11	7	86	--	--	--	--
Tamarack	2	--	42	-10	--	--	--	--
Northern white-cedar	--	--	1	16	1	4	--	--
Other softwoods	--	63	27	361	--	--	661	--
Total	2	869	177	1,531	289	4	806	--
HARDWOODS								
Select white oaks	--	4,965	659	1,156	94	--	--	--
Select red oaks	--	6,222	230	2,104	394	--	53	--
Other red oaks	--	3,376	86	315	35	--	10	--
Hickory	--	1,698	89	1,010	17	--	--	--
Yellow birch	--	7	61	111	--	--	--	--
Hard maple	--	392	26	2,693	--	--	--	--
Soft maple	--	2,350	9,624	5,839	527	--	--	--
Beech	--	55	12	526	12	--	--	--
Ash	--	811	3,789	7,098	177	--	--	--
Balsam poplar	--	3	34	66	142	--	--	--
Cottonwood	--	331	979	571	276	--	--	--
Bigtooth aspen	--	821	64	985	1,760	--	--	--
Quaking aspen	--	868	788	775	2,317	27	23	--
Basswood	--	339	487	1,961	8	51	--	27
Yellow-poplar	--	28	11	338	--	--	--	--
Black walnut	--	326	307	160	--	--	--	--
Black cherry	--	1,757	736	3,757	161	--	--	--
Butternut	--	20	14	53	--	--	--	--
Elm	--	-21	-1,579	-1,641	-127	--	--	12
Paper birch	--	93	158	246	212	--	--	--
Other hardwoods	--	135	1,334	1,313	6	--	--	--
Total	--	24,576	17,909	29,436	6,011	78	86	39
All species	2	25,445	18,086	30,967	6,300	82	892	39

Table 49.--Net annual growth of sawtimber on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Species group	All types	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
SOFTWOODS								
White pine	17,855	--	1,242	4,467	--	--	--	44
Red pine	7,824	1	5,904	268	--	--	--	--
Jack pine	3,034	1,765	1,081	--	--	--	--	--
White spruce	73	--	--	--	--	73	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	34	--	34	--	--	--	--	--
Hemlock	501	--	--	--	--	--	--	--
Tamarack	27	--	--	--	--	--	--	16
Northern white-cedar	208	--	--	--	--	--	--	103
Other softwoods	5,058	--	52	315	--	1,450	--	--
Total	34,614	1,766	8,313	5,050	--	1,523	--	163
HARDWOODS								
Select white oaks	41,911	--	105	--	--	--	--	--
Select red oaks	54,556	656	916	25	--	--	--	--
Other red oaks	18,922	3	1	--	--	--	--	--
Hickory	14,894	1,365	--	--	--	--	--	--
Yellow birch	610	--	--	--	--	--	--	69
Hard maple	13,659	--	--	--	--	--	--	354
Soft maple	56,995	--	1	68	--	--	--	--
Beech	2,231	--	--	--	--	--	--	--
Ash	27,301	--	--	--	--	--	--	156
Balsam poplar	1,808	--	--	--	--	--	--	--
Cottonwood	8,481	--	--	--	--	--	--	--
Bigtooth aspen	10,950	--	--	--	--	--	--	--
Quaking aspen	8,283	--	--	--	--	--	--	1
Basswood	7,500	--	--	--	--	--	--	161
Yellow-poplar	737	--	--	--	--	--	--	--
Black walnut	2,089	--	--	--	--	--	--	--
Black cherry	20,384	--	4	779	--	48	--	--
Butternut	113	--	--	--	--	--	--	9
Elm	-1,995	--	--	--	--	--	--	54
Paper birch	524	--	--	--	--	--	--	13
Other hardwoods	7,688	--	--	--	--	--	--	--
Total	297,641	2,024	1,027	872	--	48	--	817
All species	332,255	3,790	9,340	5,922	--	1,571	--	980

(Table 49 continued on next page)

(Table 49 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS								
White pine	--	6,282	294	4,168	1,067	--	291	--
Red pine	--	565	102	367	568	--	49	--
Jack pine	--	160	--	--	--	--	28	--
White spruce	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--
Hemlock	--	66	1	434	--	--	--	--
Tamarack	--	--	47	-36	--	--	--	--
Northern white-cedar	--	--	6	--	--	99	--	--
Other softwoods	--	351	--	2,236	--	--	654	--
Total	--	7,424	450	7,169	1,635	99	1,022	--
HARDWOODS								
Select white oaks	--	28,771	1,878	10,616	541	--	--	--
Select red oaks	--	36,602	1,051	14,164	1,142	--	--	--
Other red oaks	--	16,464	822	1,546	86	--	--	--
Hickory	--	10,244	362	2,861	62	--	--	--
Yellow birch	--	--	27	514	--	--	--	--
Hard maple	--	1,835	235	11,235	--	--	--	--
Soft maple	--	6,278	36,814	13,333	501	--	--	--
Beech	--	295	-14	1,950	--	--	--	--
Ash	--	1,519	9,252	16,031	343	--	--	--
Balsam poplar	--	9	1,654	23	122	--	--	--
Cottonwood	--	578	4,460	2,167	1,276	--	--	--
Bigtooth aspen	--	2,625	129	1,945	6,251	--	--	--
Quaking aspen	--	69	2,060	2,224	3,929	--	--	--
Basswood	--	360	1,697	4,965	20	71	--	226
Yellow-poplar	--	109	15	613	--	--	--	--
Black walnut	--	1,888	58	143	--	--	--	--
Black cherry	--	5,335	2,679	11,355	184	--	--	--
Butternut	--	0	36	68	--	--	--	--
Elm	--	301	-557	-1,796	-49	--	--	52
Paper birch	--	29	119	137	226	--	--	--
Other hardwoods	--	265	6,770	653	--	--	--	--
Total	--	113,576	69,547	94,747	14,634	71	--	278
All species	--	121,000	69,997	101,916	16,269	170	1,022	278

Table 50.--Net annual growth of growing stock on commercial forest land by forest type and stand-age class, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	626	156	--	1	5	295	--	169	--	--	--	--	--	--
Red pine	2,757	2	564	577	606	1,008	--	--	--	--	--	--	--	--
White pine	1,565	--	--	97	--	751	--	315	402	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	575	--	--	--	575	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	468	113	--	197	--	--	--	--	146	--	--	12	--	--
Tamarack	2	2	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	25,445	959	1,089	63	1,697	3,352	2,907	1,332	4,739	3,619	1,250	3,817	536	85
Elm-ash-soft maple	18,086	687	859	2,131	2,352	2,541	2,341	1,506	1,462	2,199	621	1,328	59	--
Maple-birch	30,967	3,817	2,941	2,036	3,906	3,636	1,742	3,558	2,310	2,593	1,899	2,009	520	--
Aspen	6,300	859	1,610	338	1,096	781	478	957	181	--	--	--	--	--
Paper birch	82	--	--	--	82	--	--	--	--	--	--	--	--	--
Exotic	892	125	34	323	158	--	252	--	--	--	--	--	--	--
Nonstocked	39	--	39	--	--	--	--	--	--	--	--	--	--	--
All types	87,804	6,720	7,136	5,763	10,477	12,364	7,720	7,837	9,240	8,411	3,770	7,166	1,115	85

Table 51.--Net annual growth of sawtimber on commercial forest land by forest type and stand-age class, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	3,790	656	--	1	2	1,367	--	1,764	--	--	--	--	--	--
Red pine	9,340	9	119	1,437	716	7,059	--	--	--	--	--	--	--	--
White pine	5,922	--	--	184	--	1,596	--	1,069	3,073	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	1,571	--	--	--	1,571	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	980	836	--	44	--	--	--	--	58	--	--	42	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	121,000	4,029	3,989	495	6,940	11,721	9,262	8,012	28,780	16,970	4,019	21,493	4,753	537
Elm-ash-soft maple	69,997	3,353	679	3,541	7,285	6,655	12,259	7,702	5,658	8,611	1,972	11,811	471	--
Maple-birch	101,916	8,279	8,541	3,434	6,562	8,896	8,989	13,825	7,689	8,494	12,869	9,332	5,006	--
Aspen	16,269	724	880	532	1,775	3,151	1,986	6,705	516	--	--	--	--	--
Paper birch	170	--	99	--	71	--	--	--	--	--	--	--	--	--
Exotic	1,022	--	--	42	--	--	980	--	--	--	--	--	--	--
Nonstocked	278	--	278	--	--	--	--	--	--	--	--	--	--	--
All types	332,255	17,886	14,585	9,710	24,922	40,445	33,476	39,077	45,774	34,075	18,860	42,678	10,230	537

[1/] International 1/4-inch rule.

Table 52.--Net annual growth of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	169	--	--	--	--	--	--	--	--	169	--	--	--	--	--
Poletimber	295	--	--	--	--	--	--	--	--	--	--	295	--	--	--
Sapling & seedling	162	--	--	--	--	1	--	--	159	--	--	--	2	--	--
All stands	626	--	--	--	--	1	--	--	159	169	--	295	2	--	--
Red pine															
Sawtimber	861	--	--	--	--	--	--	--	--	255	--	6	591	--	9
Poletimber	1,863	--	--	--	--	--	--	552	167	8	--	834	299	1	2
Sapling & seedling	33	2	--	--	--	1	--	11	--	19	--	--	--	--	--
All stands	2,757	2	--	--	--	1	--	563	167	282	--	840	890	1	11
White pine															
Sawtimber	853	--	--	--	--	--	--	--	--	--	--	135	--	718	--
Poletimber	683	--	--	--	--	--	--	69	--	--	--	--	614	--	--
Sapling & seedling	29	--	--	29	--	--	--	--	--	--	--	--	--	--	--
All stands	1,565	--	--	29	--	--	--	69	--	--	--	135	614	718	--
Balsam fir															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	575	--	--	--	--	--	--	419	--	156	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	575	--	--	--	--	--	--	419	--	156	--	--	--	--	--
Black spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	158	--	--	--	--	--	--	146	--	--	--	--	12	--	--
Sapling & seedling	310	113	--	--	--	--	--	--	197	--	--	--	--	--	--
All stands	468	113	--	--	--	--	--	146	197	--	--	--	12	--	--

(Table 52 continued on next page)

(Table 52 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	2	--	--	--	2	--	--	--	--	--	--	--	--	--	--
All stands	2	--	--	--	2	--	--	--	--	--	--	--	--	--	--
Oak-hickory															
Sawtimber	15,003	--	--	58	62	466	957	1,004	1,575	1,895	1,029	3,402	4,079	476	--
Poletimber	8,395	--	--	--	--	299	966	796	1,134	1,078	1,157	1,415	1,220	--	330
Sapling & seedling	2,047	--	16	3	676	710	268	372	--	1	1	--	--	--	--
All stands	25,445	--	16	61	738	1,475	2,191	2,172	2,709	2,974	2,187	4,817	5,299	476	330
Elm-ash-soft maple															
Sawtimber	7,782	--	--	16	123	383	293	631	1,709	1,159	240	1,650	1,325	253	--
Poletimber	8,641	--	193	57	320	1,207	17	1,438	1,758	391	2,448	806	6	--	--
Sapling & seedling	1,663	4	23	11	663	218	344	97	303	--	--	--	--	--	--
All stands	18,086	4	216	84	1,106	1,808	654	2,166	3,770	1,550	2,688	2,456	1,331	253	--
Maple-birch															
Sawtimber	12,626	--	--	--	71	234	313	2,145	1,715	1,443	2,269	1,356	2,411	669	--
Poletimber	10,546	--	--	85	429	0	248	1,731	1,980	1,441	1,957	2,177	498	--	--
Sapling & seedling	7,795	33	839	337	921	798	882	1,683	685	973	233	281	130	--	--
All stands	30,967	33	839	422	1,421	1,032	1,443	5,559	4,380	3,857	4,459	3,814	3,039	669	--
Aspen															
Sawtimber	958	--	--	--	--	--	--	--	--	--	262	--	696	--	--
Poletimber	2,874	--	--	--	850	486	572	106	533	8	--	--	319	--	--
Sapling & seedling	2,468	-65	16	130	280	698	111	148	2	258	890	--	--	--	--
All stands	6,300	-65	16	130	1,130	1,184	683	254	535	266	1,152	--	1,015	--	--
Paper birch															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	82	--	--	--	--	--	--	--	82	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	82	--	--	--	--	--	--	--	82	--	--	--	--	--	--
Exotic															
Sawtimber	252	--	--	--	--	--	--	--	--	--	--	252	--	--	--
Poletimber	449	--	--	--	--	--	158	--	--	--	--	--	291	--	--
Sapling & seedling	191	--	--	--	--	--	--	66	125	--	--	--	--	--	--
All stands	892	--	--	--	--	--	158	66	125	--	--	252	291	--	--
Nonstocked	39	--	39	--	--	--	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	38,504	--	--	74	256	1,083	1,563	3,780	4,999	4,921	3,800	6,801	9,102	2,116	9
Poletimber	34,561	--	193	142	1,599	1,992	1,961	5,257	5,654	3,082	5,562	5,527	3,259	1	332
Sapling & seedling	14,700	87	894	510	2,542	2,426	1,605	2,377	1,471	1,251	1,124	281	132	--	--
Nonstocked	39	--	39	--	--	--	--	--	--	--	--	--	--	--	--
All stands	87,804	87	1,126	726	4,397	5,501	5,129	11,414	12,124	9,254	10,486	12,609	12,493	2,117	341

Table 53.--Net annual growth of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	1,764	--	--	--	--	--	--	--	--	1,764	--	--	--	--	--
Poletimber	1,367	--	--	--	--	--	--	--	--	--	--	1,366	1	--	--
Sapling & seedling	659	--	--	--	1	--	--	--	658	--	--	--	--	--	--
All stands	3,790	--	--	--	1	--	--	--	658	1,764	--	1,366	1	--	--
Red pine															
Sawtimber	6,848	--	--	--	--	--	--	--	--	1,070	--	41	5,678	--	59
Poletimber	2,440	--	--	--	--	--	--	98	317	8	--	1,954	54	5	4
Sapling & seedling	52	9	--	--	--	4	--	17	--	22	--	--	--	--	--
All stands	9,340	9	--	--	--	4	--	115	317	1,100	--	1,995	5,732	5	63
White pine															
Sawtimber	4,959	--	--	--	--	--	--	--	--	--	--	817	--	4,142	--
Poletimber	804	--	--	--	--	--	--	25	--	--	--	--	779	--	--
Sapling & seedling	159	--	--	159	--	--	--	--	--	--	--	--	--	--	--
All stands	5,922	--	--	159	--	--	--	25	--	--	--	817	779	4,142	--
Balsam fir															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	1,571	--	--	--	--	--	--	73	--	1,498	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	1,571	--	--	--	--	--	--	73	--	1,498	--	--	--	--	--
Black spruce															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	99	--	--	--	--	--	--	57	--	--	--	--	42	--	--
Sapling & seedling	881	837	--	--	--	--	--	--	44	--	--	--	--	--	--
All stands	980	837	--	--	--	--	--	57	44	--	--	--	42	--	--

(Table 53 continued on next page)

(Table 53 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory															
Sawtimber	84,063	--	--	270	531	2,470	6,656	2,916	7,720	10,000	5,805	17,114	27,147	3,434	--
Poletimber	28,921	--	--	--	--	483	1,536	5,286	4,901	3,525	1,159	8,285	2,560	--	1,186
Sapling & seedling	8,016	--	39	4	1,968	3,152	395	2,454	--	1	3	--	--	--	--
All stands	121,000	--	39	274	2,499	6,105	8,587	10,656	12,621	13,526	6,967	25,399	29,707	3,434	1,186
Elm-ash-soft maple															
Sawtimber	44,750	--	--	1,800	2,904	1,999	1,273	5,607	10,505	4,981	1,004	6,194	6,184	2,299	--
Poletimber	21,054	--	71	33	3,080	1,704	344	4,396	2,581	496	7,708	606	35	--	--
Sapling & seedling	4,193	302	11	44	496	614	1,956	391	379	--	--	--	--	--	--
All stands	69,997	302	82	1,877	6,480	4,317	3,573	10,394	13,465	5,477	8,712	6,800	6,219	2,299	--
Maple-birch															
Sawtimber	59,335	--	--	--	290	1,831	868	4,940	9,623	4,680	11,378	7,924	11,899	5,902	--
Poletimber	24,899	--	--	130	91	--	1,659	4,187	4,478	1,331	8,445	2,546	2,032	--	--
Sapling & seedling	17,682	82	965	963	3,498	2,771	103	3,412	2,360	2,490	511	155	372	--	--
All stands	101,916	82	965	1,093	3,879	4,602	2,630	12,539	16,461	8,501	20,334	10,625	14,303	5,902	--
Aspen															
Sawtimber	6,706	--	--	--	1	--	--	--	--	--	1,834	--	4,871	--	--
Poletimber	7,959	--	--	--	359	693	1,380	72	3,469	31	--	--	1,955	--	--
Sapling & seedling	1,604	-332	--	437	--	918	146	97	--	226	112	--	--	--	--
All stands	16,269	-332	--	437	360	1,611	1,526	169	3,469	257	1,946	--	6,826	--	--
Paper birch															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	71	--	--	--	--	--	--	--	71	--	--	--	--	--	--
Sapling & seedling	99	--	--	--	--	--	99	--	--	--	--	--	--	--	--
All stands	170	--	--	--	--	--	99	--	71	--	--	--	--	--	--
Exotic															
Sawtimber	980	--	--	--	--	--	--	--	--	--	--	980	--	--	--
Poletimber	42	--	--	--	--	--	--	--	--	--	--	--	42	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	1,022	--	--	--	--	--	--	--	--	--	--	980	42	--	--
Nonstocked	278	--	278	--	--	--	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	209,405	--	--	2,070	3,726	6,300	8,797	13,463	27,848	22,495	20,021	33,070	55,779	15,777	59
Poletimber	33,345	898	1,015	1,607	5,963	7,459	2,699	6,371	3,441	2,739	626	155	372	--	--
Spling & seedling	89,227	--	71	163	3,530	2,880	4,919	14,194	15,817	6,889	17,312	14,757	7,500	5	1,190
Nonstocked	278	--	278	--	--	--	--	--	--	--	--	--	--	--	--
All stands	332,255	898	1,364	3,840	13,219	16,639	16,415	34,028	47,106	32,123	37,959	47,982	63,651	15,782	1,249

1/International 1/4-inch rule.

Table 54.--Timber removals[1/] from growing stock on commercial forest land by species group and county, Southern Upper Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	All counties	County										
		Alegen	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	125	27	--	--	--	--	--	--	7	--	--	--
Red pine	1,326	60	48	--	--	--	2	--	--	--	--	--
Jack pine	74	66	--	--	--	--	--	--	--	--	--	--
White spruce	10	--	6	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	26	2	--	--	--	--	--	--	--	--	--	--
Tamarack	104	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	83	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	221	41	9	--	2	6	10	--	3	--	--	--
Total	1,969	196	63	--	2	6	12	--	10	--	--	--
HARDWOODS												
Select white oaks	5,938	300	301	25	127	394	61	90	157	51	133	145
Select red oaks	7,311	420	411	146	155	156	536	295	236	118	114	234
Other red oaks	2,532	150	151	22	--	626	--	19	--	--	58	--
Hickory	632	13	30	11	18	63	28	14	17	2	3	25
Yellow birch	14	1	1	1	--	1	3	--	--	--	--	--
Hard maple	3,233	192	208	71	53	177	70	62	206	28	113	80
Soft maple	5,879	237	277	89	150	491	113	85	174	103	161	148
Beech	756	23	30	21	11	109	31	8	16	4	10	8
Ash	2,664	157	146	43	51	215	28	53	84	23	52	66
Balsam poplar	9	--	--	1	--	--	--	--	--	--	--	--
Cottonwood	837	2	1	25	5	2	9	6	1	13	18	6
Bigtooth aspen	883	15	17	27	--	--	--	16	--	13	187	1
Quaking aspen	614	9	8	--	--	3	3	--	--	4	30	--
Basswood	1,179	33	56	21	15	60	31	25	36	20	51	28
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	205	5	4	28	28	--	11	1	3	--	--	32
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	626	15	18	40	23	28	40	2	27	24	1	22
Paper birch	110	--	--	9	9	--	--	--	--	--	--	9
Other hardwoods[2/]	1,881	130	231	76	43	186	67	2	128	1	--	65
Total	35,303	1,702	1,890	656	688	2,511	1,031	678	1,085	404	931	869
All species	37,272	1,898	1,953	656	690	2,517	1,043	678	1,095	404	931	869

(Table 54 continued on next page)

[1/] Removals in 1979 are trend-level removals.
[2/] Includes black cherry.

(Table 54 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	--	--	--	2	7	--	--	--	--	--	22
Red pine	--	--	11	--	5	5	--	--	1	--	--	102
Jack pine	--	--	--	--	--	--	--	--	--	--	--	1
White spruce	--	1	--	--	2	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	3
Tamarack	6	--	7	--	--	9	5	--	--	21	--	35
Northern white-cedar	--	--	--	--	--	--	--	--	--	13	--	3
Other softwoods	--	--	--	2	51	6	--	--	21	--	--	--
Total	6	1	18	2	60	27	5	--	22	34	--	166
HARDWOODS												
Select white oaks	29	168	170	438	29	360	199	133	89	27	167	331
Select red oaks	45	256	395	161	35	393	136	142	124	14	116	596
Other red oaks	--	17	66	223	73	602	3	--	5	--	16	71
Hickory	--	49	13	62	5	11	13	35	14	2	20	11
Yellow birch	--	--	--	1	--	--	--	--	--	--	--	--
Hard maple	36	136	246	85	36	279	63	41	7	8	18	244
Soft maple	86	180	276	254	71	332	194	110	78	48	69	323
Beech	--	29	98	28	2	44	3	9	27	5	3	64
Ash	37	72	155	112	6	150	95	72	40	15	28	139
Balsam poplar	1	--	--	--	--	--	1	2	--	--	--	--
Cottonwood	73	29	10	1	--	2	98	50	--	4	14	46
Bigtooth aspen	2	1	1	2	1	76	5	1	--	--	--	288
Quaking aspen	39	8	2	--	--	13	55	1	--	--	1	130
Basswood	9	52	57	24	5	75	43	34	4	7	20	85
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	--	5	--	27	3	--	--	4	--	--	3	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	2	30	9	16	9	16	12	13	7	13	10	35
Paper birch	10	--	--	9	--	1	11	5	--	--	--	2
Other hardwoods	2	42	132	117	25	100	26	44	12	4	24	50
Total	371	1,074	1,630	1,560	300	2,454	957	696	407	147	509	2,415
All species	377	1,075	1,648	1,562	360	2,481	962	696	429	181	509	2,581

(Table 54 continued on next page)

(Table 54 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	40	--	5	3	5	--	--	--	3	4	--	--
Red pine	330	1	736	--	--	--	--	8	--	10	7	--
Jack pine	5	--	2	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	1	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	13	--	4	--	3	--	--	--	1	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	21	--
Northern white-cedar	1	--	--	--	5	--	--	--	61	--	--	--
Other softwoods	--	--	61	1	5	1	--	--	--	2	--	--
Total	389	1	808	4	18	2	--	8	65	16	28	--
HARDWOODS												
Select white oaks	235	115	231	180	509	101	69	122	44	104	254	50
Select red oaks	303	79	199	96	193	305	49	174	57	407	208	7
Other red oaks	181	6	57	65	--	49	--	2	--	27	43	--
Hickory	1	13	3	6	20	37	--	13	1	11	66	2
Yellow birch	--	--	1	--	5	--	--	--	--	--	--	--
Hard maple	79	39	33	107	86	87	33	92	46	157	15	--
Soft maple	186	90	89	190	401	129	104	106	231	171	117	16
Beech	15	5	39	11	7	39	1	20	1	20	13	2
Ash	49	39	22	81	172	40	121	88	46	89	69	9
Balsam poplar	--	1	--	--	--	--	1	--	2	--	--	--
Cottonwood	5	--	2	96	108	7	68	25	74	21	15	1
Bigtooth aspen	149	--	8	8	1	5	--	1	55	3	--	--
Quaking aspen	49	9	7	50	28	1	22	1	137	2	1	1
Basswood	6	15	9	61	74	49	14	51	20	37	37	15
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	3	--	--	--	--	9	--	--	--	34	5	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	4	11	9	5	37	18	27	50	4	27	12	10
Paper birch	1	--	--	3	28	--	2	--	2	9	--	--
Other hardwoods	25	16	104	4	25	82	42	4	2	57	11	2
Total	1,291	438	813	963	1,694	958	553	749	722	1,176	866	115
All species	1,680	439	1,621	967	1,712	960	553	757	787	1,192	894	115

Table 55.--Timber removals[1/] from sawtimber on commercial forest land by species group and county, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[2/]

Species group	All counties	County										
		Alegen	Barry	Berrien	Branch	Calhoun	Cass	Clinton	Eaton	Genesee	Gratiot	Hillsdale
SOFTWOODS												
White pine	662	142	--	--	--	--	--	--	21	--	--	--
Red pine	3,388	150	119	--	--	--	4	--	--	--	2	--
Jack pine	134	134	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	67	5	--	--	--	--	--	--	--	--	--	--
Tamarack	8	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	19	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	25	5	1	--	--	1	--	--	--	--	--	--
Total	4,303	436	120	--	--	1	4	--	21	--	2	--
HARDWOODS												
Select white oaks	30,242	1,575	1,557	134	638	2,009	344	377	748	274	673	721
Select red oaks	36,100	2,226	2,084	675	832	852	2,730	1,438	1,226	516	630	1,248
Other red oaks	12,953	581	838	116	--	3,247	--	96	--	--	242	--
Hickory	3,136	75	171	56	80	305	147	41	91	10	18	101
Yellow birch	60	--	--	5	--	5	15	--	--	--	--	--
Hard maple	17,732	1,090	1,151	386	287	1,000	387	352	983	152	631	441
Soft maple	27,864	1,129	1,349	431	648	2,383	520	394	873	436	807	681
Beech	3,902	120	169	114	62	599	170	43	89	20	59	47
Ash	12,562	772	730	210	228	1,049	129	213	405	104	254	315
Balsam poplar	29	--	--	3	--	--	--	--	--	--	--	--
Cottonwood	4,203	10	6	144	25	15	51	32	7	65	92	33
Bigtooth aspen	3,019	26	66	150	1	--	--	53	--	43	521	6
Quaking aspen	1,852	25	--	--	--	2	5	--	--	13	133	--
Basswood	6,003	172	287	112	83	310	159	115	184	91	262	143
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	1,134	35	29	148	160	6	56	8	19	--	--	183
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	1,263	31	25	87	40	40	46	--	25	65	--	46
Paper birch	417	1	--	47	47	--	--	--	--	--	--	47
Other hardwoods[3/]	7,341	579	950	284	146	792	255	10	569	--	--	215
Total	169,812	8,447	9,412	3,102	3,277	12,614	5,014	3,172	5,219	1,789	4,322	4,227
All species	174,115	8,883	9,532	3,102	3,277	12,615	5,018	3,172	5,240	1,789	4,324	4,227

(Table 55 continued on next page)

1/Removals in 1979 are trend-level removals..
2/International 1/4-inch rule.
3/Includes black cherry.

(Table 55 continued)

Species group	County											
	Huron	Ingham	Ionia	Jackson	Kalamazoo	Kent	Lapeer	Lenawee	Livingston	Macomb	Monroe	Montcalm
SOFTWOODS												
White pine	--	--	--	--	10	41	--	--	--	--	--	118
Red pine	--	--	40	--	14	29	--	--	2	--	--	266
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	8
Tamarack	--	--	--	--	--	--	--	--	--	5	--	3
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	7	1	--	--	2	--	--	--
Total	--	--	40	--	31	71	--	--	4	5	--	395
HARDWOODS												
Select white oaks	151	847	892	2,236	154	1,848	1,047	659	458	131	816	1,698
Select red oaks	235	1,246	2,079	621	192	1,743	720	731	488	69	588	2,853
Other red oaks	--	141	272	1,369	337	3,139	--	--	23	--	95	417
Hickory	--	210	60	308	32	63	67	163	80	11	107	57
Yellow birch	--	--	--	3	--	--	--	--	--	--	--	--
Hard maple	202	768	1,390	481	202	1,478	338	212	31	31	101	1,365
Soft maple	423	908	1,389	1,205	342	1,580	924	506	332	210	325	1,528
Beech	--	160	403	156	12	241	15	49	139	21	20	282
Ash	166	332	790	551	16	736	445	349	160	62	139	670
Balsam poplar	3	--	--	--	--	--	3	10	--	--	--	--
Cottonwood	371	100	53	4	3	13	492	252	--	17	67	234
Bigtooth aspen	--	3	4	10	5	148	--	4	--	--	--	1,201
Quaking aspen	118	13	--	--	--	24	185	3	--	--	6	291
Basswood	51	264	291	122	23	381	221	171	24	35	100	431
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	--	19	2	151	16	3	--	18	--	--	16	3
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	--	77	11	26	5	36	4	33	15	10	14	66
Paper birch	24	--	--	47	--	1	32	23	--	--	--	2
Other hardwoods	6	151	588	422	80	497	92	151	44	13	81	169
Total	1,750	5,239	8,224	7,712	1,419	11,931	4,585	3,334	1,794	610	2,475	11,267
All species	1,750	5,239	8,264	7,712	1,450	12,002	4,585	3,334	1,798	615	2,475	11,662

(Table 55 continued on next page)

(Table 55 continued)

Species group	County											
	Muskegon	Oakland	Ottawa	Saginaw	St. Clair	St. Joseph	Sanilac	Shiawassee	Tuscola	Van Buren	Washtenaw	Wayne
SOFTWOODS												
White pine	221	--	28	19	25	--	--	--	15	22	--	--
Red pine	822	2	1,837	--	--	--	--	20	--	65	16	--
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	36	--	10	--	8	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	19	--	--	--	--	--	--	--
Other softwoods	--	--	8	--	--	--	--	--	--	--	--	--
Total	1,079	2	1,883	19	52	--	--	20	15	87	16	--
HARDWOODS												
Select white oaks	1,206	602	891	959	2,633	532	358	647	234	560	1358	275
Select red oaks	1,362	382	772	554	994	1,299	259	843	296	2064	1222	31
Other red oaks	998	25	204	299	--	291	--	12	--	137	74	--
Hickory	7	71	11	36	53	194	--	71	5	63	361	11
Yellow birch	--	--	4	--	28	--	--	--	--	--	--	--
Hard maple	441	213	179	609	475	474	158	522	247	875	80	--
Soft maple	849	427	385	933	1,761	643	476	504	1118	805	575	65
Beech	81	17	191	64	36	215	5	107	5	107	72	12
Ash	241	173	99	404	788	184	475	359	214	427	338	35
Balsam poplar	--	2	--	--	--	--	3	--	5	--	--	--
Cottonwood	26	--	7	467	538	40	347	122	374	115	75	6
Bigtooth aspen	491	1	20	38	--	19	2	3	183	21	--	--
Quaking aspen	130	17	14	157	110	--	53	--	551	2	--	--
Basswood	29	77	46	312	375	245	61	263	101	190	189	83
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	24	--	1	--	--	30	--	--	--	179	28	
Butternut	--	--	--	--	--	--	--	--	--	--	--	--
Elm	--	18	26	4	113	37	84	158	5	53	41	22
Paper birch	1	--	--	--	93	--	2	--	3	47	--	--
Other hardwoods	82	52	336	11	82	294	140	11	6	187	40	6
Total	5,968	2,077	3,186	4,847	8,079	4,497	2,423	3,622	3,347	5,832	4,453	546
All species	7,047	2,079	5,069	4,866	8,131	4,497	2,423	3,642	3,362	5,919	4,469	546

Table 56.--Timber removals[1/] from growing stock and sawtimber on commercial forest land by species group, Southern Lower Peninsula, Michigan, 1965 and 1979

Species group	Growing stock		Sawtimber	
	[2/]1965	1979	[2/]1965	1979
	Thousand cubic feet		[3/]Thousand board feet	
SOFTWOODS				
White pine	386	125	2,050	662
Red pine	155	1,326	284	3,388
Jack pine	98	74	183	134
White spruce	--	10	5	--
Black spruce	--	--	--	--
Balsam fir	--	--	2	--
Hemlock	95	26	550	67
Tamarack	157	104	109	8
Northern white-cedar	119	83	53	19
Other softwoods	190	221	118	25
Total	1,200	1,969	3,354	4,303
HARDWOODS				
Select white oaks	5,359	5,938	25,506	30,242
Select red oaks	5,597	7,311	29,211	36,100
Other red oaks	2,466	2,532	9,544	12,953
Hickory	760	632	3,771	3,136
Yellow birch	75	14	148	60
Hard maple	3,854	3,233	19,960	17,732
Soft maple	6,330	5,879	28,364	27,864
Beech	1,311	756	6,600	3,902
Ash	2,732	2,664	10,307	12,562
Balsam poplar	67	9	239	29
Cottonwood	1,119	837	6,239	4,203
Bigtooth aspen	1,732	883	5,922	3,019
Quaking aspen	1,204	614	3,632	1,852
Basswood	1,687	1,179	9,248	6,003
Black walnut	382	205	2,364	1,134
Elm	6,983	626	37,965	1,263
Paper birch	179	110	117	417
Other hardwoods[5/]	2,263	1,881	8,560	7,341
Total	44,100	35,303	207,697	169,812
All species	45,300	37,272	211,051	174,115

[1/]Removals in 1979 are trend-level removals.

[2/]Figures have been adjusted from those published after the 1966 survey to conform 1980 volumes because of changes in survey definitions and procedures.

[3/]International 1/4-inch rule.

[4/]Included in other hardwoods.

[5/]Includes black cherry in 1965 and 1979 and hickory in 1965.

Table 57.--Timber removals[1] from growing stock and sawtimber on commercial forest land by item and species category, Southern Lower Peninsula, Michigan, 1979

Item	Growing stock						Sawtimber					
	All species	Pine	Other softwoods	Aspen	Hard maple	Other hardwoods	All species	Pine	Other softwoods	Aspen	Hard maple	Other hardwoods
	Thousand cubic feet						[2] Thousand board feet					
ROUNDWOOD PRODUCTS												
Pulpwood	1,967	1,312	--	429	7	219	4,280	3,351	--	736	16	177
Saw logs	22,166	88	--	674	2,443	18,961	122,255	526	--	3,294	14,825	103,610
Fuelwood	4,049	7	5	165	186	3,686	13,264	22	19	543	616	12,064
Posts	11	--	--	--	--	11	66	--	--	--	--	66
Veneer logs	480	--	--	12	90	378	3527	--	--	86	649	2,792
Poles	--	--	--	--	--	--	--	--	--	--	--	--
Other[3]	25	--	--	--	--	25	129	--	--	--	--	129
Total	28,698	1,407	5	1,280	2,726	23,280	143,521	3,899	19	4,659	16,106	118,838
LOGGING RESIDUE	2,888	54	--	74	359	2,401	8,215	48	--	84	1,020	7,063
OTHER REMOVALS	5,686	64	439	143	148	4,892	22,379	237	100	128	606	21,308
TOTAL REMOVALS	37,272	1,525	444	1,497	3,233	30,573	174,115	4,184	119	4,871	17,732	147,209

[1] Removals in 1979 are trend-level removals.

[2] International 1/4-inch rule.

[3] Includes charcoal wood, shingle bolts, cabin logs, particleboard bolts, pilings, etc.

[4] Less than 500 cubic feet.

Table 58.--Net annual growth and removals[1/] of growing stock on commercial forest land by species group, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	Net annual growth	Annual timber removals
SOFTWOODS		
White pine	2,766	125
Red pine	3,181	1,326
Jack pine	586	74
White spruce	507	10
Black spruce	--	--
Balsam fir	6	--
Hemlock	104	26
Tamarack	39	104
Northern white-cedar	247	83
Other softwoods	1,256	221
Total	8,692	1,969
HARDWOODS		
Select white oaks	6,892	5,938
Select red oaks	9,190	7,311
Other red oaks	3,823	2,532
Hickory	2,821	632
Yellow birch	186	14
Hard maple	3,162	3,233
Soft maple	18,397	5,879
Beech	605	756
Ash	11,900	2,664
Balsam poplar	245	9
Cottonwood	2,157	837
Bigtooth aspen	3,638	883
Quaking aspen	4,906	614
Basswood	2,892	1,179
Black walnut	793	205
Elm	-3,351	626
Paper birch	713	110
Other hardwoods[2/]	10,143	1,881
Total	79,112	35,303
All species	87,804	37,272

1/Removals in 1979 are trend-level removals.

2/Includes yellow poplar, black cherry and butternut.

Table 59.--Net annual growth and removals[1/] of sawtimber on commercial forest land by species group, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[2/]

Species group	Net annual growth	Annual timber removals
SOFTWOODS		
White pine	17,855	662
Red pine	7,824	3,388
Jack pine	3,034	134
White spruce	73	--
Black spruce	--	--
Balsam fir	34	--
Hemlock	501	67
Tamarack	27	8
Northern white-cedar	208	19
Other softwoods	5,058	25
Total	34,614	4,303
HARDWOODS		
Select white oaks	41,911	30,242
Select red oaks	54,556	36,100
Other red oaks	18,922	12,953
Hickory	14,894	3,136
Yellow birch	610	60
Hard maple	13,659	17,732
Soft maple	56,995	27,864
Beech	2,231	3,902
Ash	27,301	12,562
Balsam poplar	1,808	29
Cottonwood	8,481	4,203
Bigtooth aspen	10,950	3,019
Quaking aspen	8,283	1,852
Basswood	7,500	6,003
Black walnut	2,089	1,134
Elm	-1,995	1,263
Paper birch	524	417
Other hardwoods[3/]	28,922	7,341
Total	297,641	169,812
All species	332,255	174,115

[1/]Removals in 1979 are trend-level removals.

[2/]International 1/4-inch rule.

[3/]Includes black cherry.

Table 60.--Net annual growth and removals[1/] of growing stock on commercial forest land by ownership class and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	310	117	193	164	39	125
Bureau of Land Mgmt.	--	--	--	--	--	--
Miscellaneous federal	110	--	110	3	--	3
Indian	--	--	--	--	--	--
State	7,654	1,807	5,847	197	49	148
County and municipal	1,847	725	1,122	57	27	30
Forest industry	--	--	--	--	--	--
Farmer and other	77,883	6,043	71,840	36,851	1,854	34,997
All owners	87,804	8,692	79,112	37,272	1,969	35,303

[1/]Removals in 1979 are trend-level removals.

[2/]Includes miscellaneous private-corporation and miscellaneous private-individual.

Table 61.--Net annual growth and removals[1/] of sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[2/]

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	1,168	282	886	433	94	339
Bureau of Land Mgmt.	--	--	--	--	--	--
Miscellaneous federal	810	--	810	10	--	10
Indian	--	--	--	--	--	--
State	31,026	5,504	25,522	722	85	637
County and municipal	7,683	3,031	4,652	112	10	102
Forest industry	--	--	--	--	--	--
Farmer and other	291,568	25,797	265,771	172,838	4,114	168,724
All owners	332,255	34,614	297,641	174,115	4,303	169,812

1/Removals in 1979 are trend-level removals.

2/International 1/4-inch rule.

3/Includes miscellaneous private-corporation and miscellaneous private-individual.

Table 62.--Annual mortality of growing stock on commercial forest land by softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1965[1/] and 1979

(In million cubic feet)

Species	1965[1/]	1979
Softwoods	0.2	0.3
Hardwoods	14.3	17.2
Total	14.5	17.5

1/Figures have been adjusted from those published after the 1966 survey to conform to 1979 volumes because of changes in survey definitions and procedures

Table 63.--Annual mortality of growing stock on commercial forest land by species group and cause, Southern Lower Peninsula, Michigan, 1979

(In thousand cubic feet)

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
SOFTWOODS								
White pine	127	--	45	--	--	82	--	--
Red pine	4	--	--	--	--	--	--	4
Jack pine	39	--	2	--	--	--	--	37
White spruce	7	--	--	--	--	--	--	7
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	2	--	--	--	--	--	--	2
Hemlock	5	--	--	--	--	--	--	5
Tamarack	69	--	--	--	--	--	--	69
Northern white-cedar	19	--	--	--	--	--	--	19
Other softwoods	54	--	--	--	--	--	--	54
Total	326	--	47	--	--	82	--	197
HARDWOODS								
Select white oaks	385	35	95	--	--	--	--	255
Select red oaks	1,487	--	--	--	--	41	--	1,446
Other red oaks	519	--	245	--	--	--	--	274
Hickory	144	--	--	--	--	39	--	105
Yellow birch	26	--	--	--	--	--	--	26
Hard maple	427	--	--	--	--	427	--	--
Soft maple	674	--	--	--	--	291	--	383
Beech	525	--	--	--	--	525	--	--
Ash	1,251	--	82	--	--	302	--	867
Balsam poplar	163	--	71	--	--	--	--	92
Cottonwood	132	--	30	--	--	--	26	76
Bigtooth aspen	887	--	622	--	--	--	--	265
Quaking aspen	1,436	--	466	--	--	83	--	887
Basswood	273	--	163	--	--	--	--	110
Yellow-poplar	46	--	--	--	--	--	--	46
Black walnut	100	--	--	--	--	--	--	100
Black cherry	136	--	--	--	--	30	--	106
Butternut	9	--	--	--	--	--	--	9
Elm	8,011	--	4,856	--	--	--	--	3,155
Paper birch	22	--	--	--	--	--	--	22
Other hardwoods	525	--	119	--	--	287	--	119
Total	17,178	35	6,749	--	--	2,025	26	8,343
All species	17,504	35	6,796	--	--	2,107	26	8,540

Table 64.--Annual mortality of sawtimber on commercial forest land by species group and cause, Southern Lower Peninsula, Michigan, 1979

(In thousand board feet)[1/]

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
SOFTWOODS								
White pine	353	--	136	--	--	217	--	--
Red pine	--	--	--	--	--	--	--	--
Jack pine	68	--	--	--	--	--	--	68
White spruce	4	--	--	--	--	--	--	4
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	7	--	--	--	--	--	--	7
Hemlock	15	--	--	--	--	--	--	15
Tamarack	141	--	--	--	--	--	--	141
Northern white-cedar	6	--	--	--	--	--	--	6
Other softwoods	95	--	--	--	--	--	--	95
Total	689	--	136	--	--	217	--	336
HARDWOODS								
Select white oaks	667	--	655	--	--	--	--	12
Select red oaks	5,464	--	--	--	--	187	--	5,277
Other red oaks	1,226	--	1,146	--	--	--	--	80
Hickory	228	--	--	--	--	11	--	217
Yellow birch	52	--	--	--	--	--	--	52
Hard maple	1,382	--	--	--	--	1,382	--	--
Soft maple	1,606	--	--	--	--	505	--	1,101
Beech	1,954	--	--	--	--	1,954	--	--
Ash	3,120	--	--	--	--	3,081	--	39
Balsam poplar	454	--	--	--	--	--	--	454
Cottonwood	263	--	11	--	--	--	--	252
Bigtooth aspen	1,543	--	--	--	--	--	--	1,543
Quaking aspen	1,433	--	557	--	--	--	--	876
Basswood	908	--	885	--	--	--	--	23
Yellow-poplar	187	--	--	--	--	--	--	187
Black walnut	305	--	--	--	--	--	--	305
Black cherry	69	--	--	--	--	9	--	60
Butternut	23	--	--	--	--	--	--	23
Elm	9,463	--	1,424	--	--	--	--	8,039
Paper birch	9	--	--	--	--	--	--	9
Other hardwoods	752	--	261	--	--	491	--	--
Total	31,108	--	4,939	--	--	7,620	--	18,549
All species	31,797	--	5,075	--	--	7,837	--	18,885

[1/]International 1/4-inch rule.

Table 65.--Annual mortality of growing stock and sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1979

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	- - - Thousand cubic feet- - -			- - - [1/] Thousand board feet- - -		
National Forest	53	1	52	90	--	90
Bureau of Land Management	--	--	--	--	--	--
Miscellaneous federal	--	--	--	--	--	--
Indian	--	--	--	--	--	--
State	835	24	811	1,469	46	1,423
County and municipal	175	1	174	133	--	133
Forest industry	--	--	--	--	--	--
Farmer	9,028	82	8,946	14,141	251	13,890
Misc. private-corp.	829	14	815	2,172	5	2,167
Misc. private-indiv.	6,584	204	6,380	13,792	387	13,405
All owners	17,504	326	17,178	31,797	689	31,108

[1/] International 1/4-inch rule.

Table 66.--Output of timber products by source of material and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1978

Product	Standard units	Total		Roundwood products: Growing stock		Roundwood products: Nongrowing stock		Plant byproducts	
		No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet
PULPWOOD									
Softwood	1/Standard	19,763	1,560	16,621	1,312	3,117	246	25	2
Hardwood	cords	44,299	3,485	8,456	655	1,175	91	34,668	2,739
Total		64,062	5,045	25,077	1,967	4,292	337	34,693	2,741
SAW LOGS									
Softwood	2/Thousand	547	89	541	88	6	1	--	--
Hardwood	board feet	133,009	23,034	127,489	22,078	5,520	956	--	--
Total		133,556	23,123	128,030	22,166	5,526	957	--	--
VENEER LOGS									
Softwood	2/Thousand	--	--	--	--	--	--	--	--
Hardwood	board feet	3,527	480	3,527	480	--	--	--	--
Total		3,527	480	3,527	480	--	--	--	--
FUELWOOD									
Softwood	1/Standard	939	64	180	12	479	32	280	20
Hardwood	cords	251,963	17,618	57,748	4,037	155,565	10,875	38,650	2,706
Total		252,902	17,682	57,928	4,049	156,044	10,907	38,930	2,726
POSTS									
Softwood	Thousand	--	--	--	--	--	--	--	--
Hardwood	pieces	7	11	7	11	--	--	--	--
Total		7	11	7	11	--	--	--	--
POLES									
Softwood	Pieces	--	--	--	--	--	--	--	--
Hardwood		--	--	--	--	--	--	--	--
Total		--	--	--	--	--	--	--	--
OTHER 3/									
Softwood	Thousand	12	12	--	--	--	--	12	12
Hardwood	cubic feet	5,085	5,085	25	25	--	--	5,060	5,060
Total		5,097	5,097	25	25	--	--	5,072	5,072
ALL PRODUCTS									
Softwood	Thousand	--	1,725	--	1,412	--	279	--	34
Hardwood	cubic feet	--	49,713	--	27,286	--	11,922	--	10,505
Total		--	51,438	--	28,698	--	12,201	--	10,539

1/Rough-wood, 128 cubic foot basis.

2/International 1/4-inch rule.

3/Other (industrial production) includes cabin logs, charcoal wood, particleboard bolts, shingle bolts, pilings, etc.

Table 67.--Output of roundwood products by source and softwoods and hardwoods, Southern Lower Peninsula, Michigan, 1978

(In thousand cubic feet)

Product and species group	All sources	Growing-stock trees			Rough and rotten trees	Salvable dead trees	Other sources
		Total	Sawtimber	Poletimber			
INDUSTRIAL PRODUCTS							
Saw logs							
Softwood	89	88	88	--	--	--	1
Hardwood	23,034	22,078	21,201	877	284	186	486
Subtotal	23,123	22,166	21,289	877	284	186	487
Veneer logs and bolts							
Softwood	--	--	--	--	--	--	--
Hardwood	480	480	480	--	--	--	--
Subtotal	480	480	480	--	--	--	--
Pulpwood							
Softwood	1,558	1,312	806	506	77	44	125
Hardwood	746	655	235	420	23	10	58
Subtotal	2,304	1,967	1,041	926	100	54	183
Cooperage							
Softwood	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	--	--	--	--	--	--	--
Piling							
Softwood	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	--	--	--	--	--	--	--
Poles							
Softwood	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	--	--	--	--	--	--	--
Mine timbers (Round)							
Softwood	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	--	--	--	--	--	--	--
Posts (Round and split)							
Softwood	--	--	--	--	--	--	--
Hardwood	11	11	11	--	--	--	--
Subtotal	11	11	11	--	--	--	--
Other							
Softwood	--	--	--	--	--	--	--
Hardwood	25	25	17	8	--	--	--
Subtotal	25	25	17	8	--	--	--
All industrial products							
Softwood	1,647	1,400	894	506	77	44	126
Hardwood	24,296	23,249	21,944	1,305	307	196	544
Total	25,943	24,649	22,838	1,811	384	240	670
FUELWOOD							
Softwood	44	12	7	5	2	--	30
Hardwood	14,912	4,037	2,347	1,690	851	--	10,024
Total	14,956	4,049	2,354	1,695	853	--	10,054
ALL PRODUCTS							
Softwood	1,691	1,412	901	511	79	44	156
Hardwood	39,208	27,286	24,291	2,995	1,158	196	10,568
Total	40,899	28,698	25,192	3,506	1,237	240	10,724

Table 68.--Timber products from roundwood by species group and product, Southern Lower Peninsula, Michigan, 1978

Species group	All Products	Pulpwood		Saw logs		Veneer logs	
	1/ Thousand cubic feet	Cords	1/ Thousand cubic feet	2/ Thousand board feet	1/ Thousand cubic feet	2/ Thousand board feet	1/ Thousand cubic feet
SOFTWOODS							
White pine	94	--	--	428	70	--	--
Red pine	1,509	18,881	1,490	119	19	--	--
Jack pine	68	857	68	--	--	--	--
White spruce	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--
Northern white-cedar	20	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--
Total	1,691	19,738	1,558	547	89	--	--
HARDWOODS							
Select white oaks	5,701	602	44	20,889	3,663	615	84
Select red oaks	8,615	1,626	128	33,513	5,883	1,187	163
Other red oaks	2,983	563	44	11,607	2,038	411	56
Hickory	697	--	--	1,342	217	43	4
Yellow birch	4	--	--	28	4	--	--
Hard maple	3,321	141	9	15,577	2,528	649	90
Soft maple	5,444	436	32	20,590	3,614	143	19
Beech	878	40	2	3,000	493	--	--
Ash	2,651	137	8	9,583	1,673	7	--
Balsam poplar	2	--	--	10	2	--	--
Cottonwood	789	--	--	3,702	641	114	15
Bigtooth aspen	1,049	3,546	280	2,312	403	51	7
Quaking aspen	729	2,466	194	1,608	280	35	5
Basswood	821	--	--	4,731	816	26	5
Black walnut	236	--	--	855	139	173	22
Elm	857	--	--	73	12	--	--
Paper birch	210	40	2	252	44	--	--
Other hardwoods 3/	4,221	34	3	3,337	584	73	10
Total	39,208	9,631	746	133,009	23,034	3,527	480
All species	40,899	29,369	2,304	133,556	23,123	3,527	480

(Table 68 continued on next page)

1/ Small quantities may round off to less than 500 cubic feet and will be shown as a dash in columns showing thousand cubic feet.

2/ International 1/4-inch rule.

3/ Includes black cherry.

(Table 68 continued)

Species group	Fuelwood		Posts		Poles		Other Products
	Cords	1/Thousand cubic feet	Thousand pieces	1/Thousand cubic feet	Pieces	1/Thousand cubic feet	1/Thousand cubic feet
SOFTWOODS							
White pine	346	24	--	--	--	--	--
Red pine	14	--	--	--	--	--	--
Jack pine	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--
Northern white-cedar	299	20	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--
Total	659	44	--	--	--	--	--
HARDWOODS							
Select white oaks	27,292	1,908	--	--	--	--	2
Select red oaks	34,688	2,426	--	--	--	--	15
Other red oaks	12,014	840	--	--	--	--	5
Hickory	6,858	476	--	--	--	--	--
Yellow birch	--	--	--	--	--	--	--
Hard Maple	9,948	694	--	--	--	--	--
Soft maple	25,410	1,777	--	--	--	--	2
Beech	5,438	382	--	--	--	--	1
Ash	13,823	970	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--
Cottonwood	1,903	133	--	--	--	--	--
Bigtooth aspen	5,155	359	--	--	--	--	--
Quaking aspen	3,584	250	--	--	--	--	--
Basswood	--	--	--	--	--	--	--
Black walnut	1,074	75	--	--	--	--	--
Elm	12,067	845	--	--	--	--	--
Paper birch	2,343	164	--	--	--	--	--
Other hardwoods	51,716	3,613	7	11	--	--	--
Total	213,313	14,912	7	11	--	--	25
All species	213,972	14,956	7	11	--	--	25

Table 69.--Volume of primary plant residue by use and type, Southern Lower Peninsula, Michigan, 1978

(In thousand cubic feet)

Type of use	Wood residue							
	Total		Coarse[1]		Fine[2]		Bark[3]	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Fiber products[4]	2.0	3977.0	2.0	3977.0	--	--	--	202.3
Charcoal	--	--	--	--	--	--	--	--
Industrial fuel	--	522.8	--	123.5	--	399.3	--	168.2
Domestic fuel	19.6	2,182.7	19.6	2,181.9	--	0.8	12.6	1,258.7
Miscellaneous[5]	12.3	3,821.7	--	385.4	12.3	3,436.3	1.3	2,537.3
Not used[6]	0.2	289.3	--	131.7	0.2	157.6	0.2	198.2
Total	34.1	10,793.5	21.6	6,799.5	12.5	3,994.0	14.1	4,364.7

1/Suitable for chipping such as slabs, edgings, veneer cores, etc.
2/Not suitable for chipping such as sawdust, veneer clippings, etc.
3/Does not include bark disposal at pulpmills.
4/For manufacture of pulp, hardboard, or roofing felt.
5/Livestock bedding, mulch, small dimension, and specialty items.
6/Includes residue burned as waste.

Table 70.--All live shrub[1/] biomass yields on commercial forest land by shrub species group and forest type, Southern Lower Peninsula, Michigan, 1980

(In pounds per acre)

Shrub species group	Forest type														
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
TALL SHRUBS															
Balsam fir	--	--	--	--	--	--	4.8	--	--	--	--	--	--	--	--
White pine	50.0	1.2	958.4	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	0.8	--	--	10.0	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--	--	8.4	--	--	--	3.6	--
Red maple	--	--	11.2	--	--	--	521.6	--	81.6	18.4	35.2	74.8	--	--	--
Silver maple	--	--	--	--	--	--	--	--	5.6	31.6	--	--	--	--	--
Sugar maple	--	166.4	--	--	--	--	--	--	21.2	0.4	89.6	--	--	--	--
Speckled alder	--	--	--	--	--	--	--	--	--	802.0	58.4	93.6	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--	--	5.2	--	--	--
American hornbeam	--	--	--	--	--	--	--	--	14.8	.4	48.4	--	--	--	--
Dogwood	--	--	38.0	--	--	--	324.4	--	126.4	394.4	216.8	220.4	--	--	2.0
Flowering dogwood	--	--	--	--	--	--	--	--	17.6	--	13.6	--	--	--	--
Hawthorn	--	--	--	--	--	--	--	--	17.2	10.4	21.6	2.4	--	--	10.0
Beech	--	0.4	--	--	--	--	--	--	--	--	6.0	0.4	--	--	--
White ash	--	2.0	--	--	69.2	--	--	--	76.0	37.2	62.4	92.0	--	--	7.2
Black ash	--	--	--	--	--	--	--	--	--	15.6	0.4	4.8	--	--	--
Green ash	--	--	--	--	--	--	--	--	1.2	14.4	0.8	--	--	--	--
Spice bush	--	--	--	--	--	--	--	--	0.4	86.4	53.2	--	--	--	--
Apple	--	--	--	--	--	--	--	--	12.4	--	17.6	--	--	--	--
Eastern hophorn	--	--	--	--	--	--	--	--	8.4	--	4.8	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	3.6	51.2	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	12.8	24.4	8.0	92.8	--	2.0	--
Pincherry	--	--	--	--	--	--	--	--	9.6	--	--	--	--	--	--
Black cherry	8.8	251.6	462.4	--	--	--	--	--	236.4	45.6	175.2	187.2	--	250.0	--
Chokecherry	--	8.0	--	--	--	--	--	--	9.2	1.6	9.2	2.0	--	--	--
Pawpaw	--	--	--	--	--	--	--	--	--	1.6	8.4	--	--	--	--
White oak	--	--	1.6	--	--	--	--	--	63.2	2.0	3.6	2.0	--	--	--
Northern red oak	16.8	482.0	5.2	--	--	--	--	--	96.4	0.4	12.0	42.8	--	--	--
Black oak	--	--	--	--	--	--	--	--	24.8	--	1.2	--	--	--	--
Witch hazel	--	--	--	--	--	--	--	--	33.6	17.6	24.8	0.8	--	--	--
Juneberry	3.6	--	86.4	--	--	--	--	--	17.6	--	12.4	44.0	--	--	--
Hazel	--	--	--	--	--	--	--	--	0.4	68.4	12.0	102.4	--	--	--
Prickly ash	--	--	--	--	--	--	--	--	266.8	46.8	21.2	3.2	--	--	--
Viburnum	--	--	4.4	--	--	--	--	--	675.2	382.8	213.2	2,322.0	--	--	--
Elder	--	--	--	--	--	--	--	--	6.0	60.4	8.8	4.4	--	--	--
Sumac	--	215.6	--	--	--	--	--	--	28.4	32.0	17.2	329.2	--	--	--
Willow	--	--	--	--	--	--	--	--	0.8	154.0	17.2	108.8	--	183.2	29.2
Sassafras	--	--	--	--	--	--	--	--	91.6	0.8	72.8	--	--	--	--
American basswood	--	--	--	--	--	--	--	--	4.8	0.8	15.2	--	--	--	--
American elm	--	--	--	--	--	--	7.6	--	12.4	179.6	60.0	0.8	--	--	--
Slippery elm	--	--	--	--	--	--	--	--	25.2	8.0	10.0	--	--	--	--
Rock elm	--	--	--	--	--	--	--	--	24.4	50.8	1.2	--	--	--	--
Total	79.2	1,127.2	1,567.6	--	69.2	--	859.2	--	2,022.4	2,507.2	1,336.0	3,787.2	--	438.8	48.4

(Table 70 continued on next page)

(Table 70 continued)

Shrub species group	Forest type														
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
LOW SHRUBS															
Spirea	--	--	--	--	--	--	--	--	--	29.5	3.7	15.3	--	--	--
Gooseberry-currant	--	--	--	--	--	--	--	--	5.2	1.3	1.5	4.1	--	--	--
Raspberry-black	--	20.8	--	--	--	--	3.3	--	57.5	5.9	36.4	25.7	--	573.5	--
Rose	--	--	--	--	--	--	--	--	5.6	2.1	6.6	--	--	--	--
Willow herb	--	--	--	--	--	--	--	--	--	12.7	--	--	--	--	12.7
Black huckleberry	--	--	--	--	--	--	--	--	8.1	--	--	--	--	--	--
Bilberry-bluebery	--	--	20.3	--	--	--	--	--	39.4	--	1.0	1.7	--	--	--
Bush honeysuckle	--	--	--	--	--	--	--	--	--	--	--	42.7	--	--	--
Greenbriar	--	--	--	--	--	--	--	--	17.5	--	--	--	--	--	--
Grape	--	--	--	--	--	--	3.3	--	--	3.8	1.9	--	--	--	--
Total	--	20.8	20.3	--	--	--	6.6	--	133.3	55.3	51.1	89.5	--	573.5	12.7
All shrubs	79.2	1,148.0	1,587.9	--	69.2	--	865.8	--	2,155.7	2,562.5	1,387.1	3,876.7	--	1,012.3	61.1
Number of plots[2/]	1	3	2	--	1	--	2	--	103	69	136	14	--	3	2

[1/]Trees under 1.0-inch d.b.h. are also included. Tree and shrub species that averaged less than 1.0 pound per acre are not included.
[2/]Number of plots by forest type from which average yields were derived.

Table 71.--All live tree biomass yields on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1980

(In pounds per acre)

Shrub species group	Forest type														
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS															
White pine	718	5,166	83,606	--	--	--	931	--	1,596	485	1,550	1,424	--	4,155	--
Red pine	14	90,920	13,830	--	--	--	--	--	490	80	207	1,145	--	5,306	--
Jack pine	68,023	8,386	--	--	--	--	--	--	336	--	1	--	--	1,073	--
White spruce	--	--	--	--	20,921	--	--	--	145	--	33	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	446	--	--	--	--	--	--	--	1	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	85	128	584	--	--	--	--
Tamarack	--	--	--	--	--	--	8,438	43,131	--	253	70	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	12,880	--	--	155	145	4	4,372	--	--
Other softwoods	--	1,744	8,683	--	27,013	--	--	--	238	72	1,153	--	--	64,886	--
Total	68,755	106,662	106,119	--	47,934	--	22,249	43,131	2,890	1,174	3,743	2,573	4,372	75,420	--
HARDWOODS															
Select white oaks	121	2,837	2,446	--	--	--	--	--	40,702	4,378	6,643	2,998	--	461	--
Select red oaks	21,969	1,726	15,188	--	--	--	--	--	39,922	1,690	8,887	4,792	--	2,533	--
Other red oaks	501	48	--	--	--	--	--	--	16,515	644	1,325	604	--	1,951	--
Hickory	2,596	--	--	--	--	--	--	--	11,643	688	4,885	291	--	--	--
Yellow birch	--	--	--	--	--	--	--	--	75	551	916	--	--	--	--
Hard maple	1,154	--	--	--	--	--	2,565	--	1,272	489	13,270	--	--	--	--
Soft maple	6,743	172	1,152	--	--	--	9	--	7,357	36,784	15,227	5,137	4,222	--	--
Beech	--	1	--	--	--	--	--	--	312	382	5,090	261	--	--	--
Ash	--	--	--	--	308	--	504	--	3,717	16,625	15,365	3,843	2,405	--	512
Balsam poplar	--	--	--	--	--	--	--	--	38	476	183	1,829	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	808	4,683	1,878	3,698	--	--	--
Bigtooth aspen	--	372	--	--	--	--	--	--	3,050	276	1,762	15,893	--	--	--
Quaking aspen	1	141	--	--	--	--	2,233	--	1,478	2,825	1,402	21,377	4,223	9,863	--
Basswood	--	--	--	--	--	--	--	--	983	1,974	5,957	641	21,681	--	--
Yellow-poplar	--	737	--	--	--	--	--	--	263	240	1,182	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--	2,956	562	617	--	--	--	--
Black cherry	--	1,041	5,522	--	13,425	--	--	--	6,139	2,676	6,749	3,117	--	3,014	132
Butternut	2,617	--	--	--	--	--	2,242	--	314	258	158	--	--	--	--
Elm	--	--	--	--	--	--	215	--	1,476	8,634	4,895	2,320	2,624	--	1,512
Paper birch	--	--	--	--	--	--	947	--	314	688	736	4,784	18,509	--	--
Other hardwoods	1,271	802	--	--	2,714	--	--	--	2,447	6,887	6,053	1,197	686	2,545	--
Noncommercial species	1	54	--	--	--	--	--	--	1,957	2,399	3,590	1,546	--	--	1,908
Total	36,974	7,931	24,308	--	16,447	--	8,715	--	143,738	94,809	106,770	74,328	54,350	20,367	4,064
All species	105,729	114,593	130,427	--	64,381	--	30,964	43,131	146,628	95,983	110,513	76,901	58,722	95,787	4,064
Number of plots[1/]	3	9	6	--	2	--	5	1	170	148	240	42	2	8	13

[1/] Number of plots by forest type from which average yields were derived.

Table 72.--All live tree biomass on commercial forest land by species group and forest type, Southern Lower Peninsula, Michigan, 1980

(In green tons)

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
SOFTWOODS								
White pine	2,540,121	4,523	81,369	898,769	--	--	--	6,054
Red pine	2,033,725	91	1,431,988	148,674	--	--	--	--
Jack pine	686,355	428,544	132,077	--	--	--	--	--
White spruce	141,331	--	--	--	--	78,453	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	7,227	--	7,028	--	--	--	--	--
Hemlock	327,083	--	--	--	--	--	--	--
Tamarack	250,428	--	--	--	--	--	--	54,849
Northern white-cedar	206,488	--	--	--	--	--	--	83,715
Other softwoods	1,695,004	--	27,461	93,343	--	101,297	--	--
Total	7,887,762	433,158	1,679,923	1,140,786	--	179,750	--	144,618
HARDWOODS								
Select white oaks	18,060,368	765	44,705	26,289	--	--	--	--
Select red oaks	18,527,206	138,397	27,179	163,266	--	--	--	--
Other red oaks	6,339,943	3,157	753	--	--	--	--	--
Hickory	6,301,408	16,357	--	--	--	--	--	--
Yellow birch	589,734	--	--	--	--	--	--	--
Hard maple	6,573,482	7,273	--	--	--	--	--	16,674
Soft maple	19,953,995	42,478	2,711	12,379	--	--	--	60
Beech	2,531,485	--	15	--	--	--	--	--
Ash	13,110,004	--	--	--	--	1,155	--	3,276
Balsam poplar	394,001	--	--	--	--	--	--	--
Cottonwood	2,741,846	--	--	--	--	--	--	--
Bigtooth aspen	3,354,855	--	5,854	--	--	--	--	--
Quaking aspen	4,029,985	8	2,226	--	--	--	--	14,514
Basswood	3,688,929	--	--	--	--	--	--	--
Yellow-poplar	698,427	--	11,603	--	--	--	--	--
Black walnut	1,413,508	--	--	--	--	--	--	--
Black cherry	6,274,699	--	16,388	59,366	--	50,343	--	--
Butternut	277,403	16,485	--	--	--	--	--	14,570
Elm	5,323,136	--	--	--	--	--	--	1,398
Paper birch	1,133,945	--	--	--	--	--	--	6,153
Other hardwoods	5,611,331	8,010	12,627	--	--	10,179	--	--
Noncommercial species	3,110,530	7	854	--	--	--	--	--
Total	130,040,220	232,937	124,915	261,300	--	61,677	--	56,645
All species	137,927,982	666,095	1,804,838	1,402,086	--	241,427	--	201,263

(Table 72 continued on next page)

(Table 72 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
SOFTWOODS								
White pine	--	529,377	133,526	700,561	131,298	--	54,644	--
Red pine	--	162,497	21,797	93,331	105,576	--	69,771	--
Jack pine	--	111,355	--	267	--	--	14,112	--
White spruce	--	48,180	--	14,698	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--
Balsam fir	--	--	199	--	--	--	--	--
Hemlock	--	28,204	35,060	263,819	--	--	--	--
Tamarack	94,887	--	69,254	31,438	--	--	--	--
Northern white-cedar	--	--	42,519	65,504	321	14,429	--	--
Other softwoods	--	78,986	19,647	521,032	--	--	853,238	--
Total	94,887	958,599	322,002	1,690,650	237,195	14,429	991,765	--
HARDWOODS								
Select white oaks	--	13,504,724	1,201,003	3,000,452	276,374	--	6,056	--
Select red oaks	--	13,245,885	463,436	4,013,933	441,798	--	33,312	--
Other red oaks	--	5,479,817	176,520	598,391	55,645	--	25,660	--
Hickory	--	3,863,219	188,585	2,206,427	26,820	--	--	--
Yellow birch	--	24,828	151,168	413,738	--	--	--	--
Hard maple	--	422,164	134,063	5,993,308	--	--	--	--
Soft maple	--	2,441,186	10,090,739	6,876,851	473,657	13,934	--	--
Beech	--	103,503	104,839	2,299,085	24,043	--	--	--
Ash	--	1,233,355	4,560,177	6,939,479	354,359	7,937	--	10,266
Balsam poplar	--	12,508	130,436	82,425	168,632	--	--	--
Cottonwood	--	268,097	1,284,529	848,262	340,958	--	--	--
Bigtooth aspen	--	1,012,078	75,693	795,897	1,465,333	--	--	--
Quaking aspen	--	490,521	774,751	633,337	1,970,993	13,935	129,700	--
Basswood	--	326,277	541,544	2,690,433	59,129	71,546	--	--
Yellow-poplar	--	87,092	65,748	533,984	--	--	--	--
Black walnut	--	980,731	154,067	278,710	--	--	--	--
Black cherry	--	2,037,018	733,992	3,047,950	287,352	--	39,638	2,652
Butternut	--	104,170	70,794	71,384	--	--	--	--
Elm	--	489,733	2,368,214	2,210,907	213,915	8,659	--	30,310
Paper birch	--	104,311	188,694	332,615	441,093	61,079	--	--
Other hardwoods	--	811,765	1,888,998	2,733,648	110,378	2,264	33,462	--
Noncommercial species	--	649,412	658,013	1,621,407	142,574	--	--	38,263
Total	--	47,692,394	26,006,003	48,222,623	6,853,053	179,354	267,828	81,491
All species	94,887	48,650,993	26,328,005	49,913,273	7,090,248	193,783	1,259,593	81,491

Table 73.--All live tree biomass by species group and tree biomass component, Southern Lower Peninsula, Michigan, 1980

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
			-Green tons-			
SOFTWOODS						
White pine	2,540,121	296,587	1,502,346	662,083	45,452	33,653
Red pine	2,033,725	119,963	1,252,617	574,415	55,438	31,292
Jack pine	686,355	118,943	390,096	176,032	816	468
White spruce	141,331	85,812	35,169	17,442	1,964	944
Black spruce	--	--	--	--	--	--
Balsam fir	7,227	199	4,734	2,294	--	--
Hemlock	327,083	33,477	200,365	93,241	--	--
Tamarack	250,428	94,929	102,771	50,424	1,072	1,232
Northern white-cedar	206,488	91,014	65,343	30,823	12,033	7,275
Other softwoods	1,695,004	609,618	668,982	301,125	72,337	42,942
Total	7,887,762	1,450,542	4,222,423	1,907,879	189,112	117,806
HARDWOODS						
Select white oaks	18,060,368	859,388	11,153,514	5,310,195	460,574	276,697
Select red oaks	18,527,206	565,801	11,917,466	5,464,014	357,744	222,181
Other red oaks	6,339,943	303,576	3,983,708	1,830,284	142,281	80,094
Hickory	6,301,408	535,756	3,785,536	1,801,368	114,735	64,013
Yellow birch	589,734	137,306	247,162	116,178	51,416	37,672
Hard maple	6,573,482	891,250	3,623,043	1,696,351	219,040	143,798
Soft maple	19,953,995	2,600,468	10,878,382	5,144,938	800,221	529,986
Beech	2,531,485	132,535	1,432,763	688,899	173,553	103,735
Ash	13,110,004	3,068,321	6,561,124	3,035,815	283,202	161,542
Balsam poplar	394,001	26,867	246,442	111,615	5,000	4,077
Cottonwood	2,741,846	168,491	1,695,870	821,520	24,045	31,920
Bigtooth aspen	3,354,855	230,423	2,074,679	965,495	48,791	35,467
Quaking aspen	4,029,985	972,514	1,965,474	948,545	86,642	56,810
Basswood	3,688,929	404,632	2,107,792	955,161	137,750	83,594
Yellow-poplar	698,427	34,677	456,065	207,685	--	--
Black walnut	1,413,508	42,261	898,523	418,610	35,979	18,135
Black cherry	6,274,699	1,112,121	3,231,731	1,455,678	303,312	171,857
Butternut	277,403	83,219	94,920	44,553	34,490	20,221
Elm	5,323,136	2,279,040	1,861,124	915,196	172,822	94,954
Paper birch	1,133,945	268,403	567,370	270,097	17,555	10,520
Other hardwoods	5,611,331	1,506,740	2,277,530	1,098,908	436,890	291,263
Noncommercial species	3,110,530	2,296,474	--	--	533,285	280,771
Total	130,040,220	18,520,263	71,060,218	33,301,105	4,439,327	2,719,307
All species	137,927,982	19,970,805	75,282,641	35,208,984	4,628,439	2,837,113

(Table 73 continued on next page)

(Table 73 continued)

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
			Thousand cubic feet			
SOFTWOODS						
White pine	140,368	16,409	83,017	36,586	2,503	1,853
Red pine	99,216	5,817	61,115	28,026	2,721	1,537
Jack pine	28,837	4,951	16,421	7,410	35	20
White spruce	8,010	4,862	1,994	989	111	54
Black spruce	--	--	--	--	--	--
Balsam fir	330	9	216	105	--	--
Hemlock	13,760	1,394	8,438	3,928	--	--
Tamarack	10,940	4,173	4,471	2,194	47	55
Northern white-cedar	14,117	6,202	4,488	2,117	817	493
Other softwoods	81,386	29,395	32,013	14,418	3,487	2,073
Total	396,964	73,212	212,173	95,773	9,721	6,085
HARDWOODS						
Select white oaks	637,389	29,507	393,898	187,536	16,501	9,947
Select red oaks	646,617	19,427	415,818	190,674	12,719	7,979
Other red oaks	218,659	10,274	137,443	63,156	4,980	2,806
Hickory	218,942	18,131	131,801	62,716	4,036	2,258
Yellow birch	22,145	5,086	9,237	4,346	1,987	1,489
Hard maple	248,553	33,537	136,961	64,124	8,364	5,567
Soft maple	861,754	112,210	469,567	222,090	34,758	23,129
Beech	98,420	5,152	55,647	26,758	6,791	4,072
Ash	553,683	128,293	277,822	128,568	12,092	6,908
Balsam poplar	19,996	1,359	12,506	5,664	257	210
Cottonwood	116,854	7,140	72,240	34,994	1,059	1,421
Bigtooth aspen	160,685	10,947	99,376	46,251	2,377	1,734
Quaking aspen	192,338	46,200	93,891	45,319	4,180	2,748
Basswood	183,580	20,032	104,900	47,552	6,903	4,193
Yellow-poplar	36,947	1,833	24,127	10,987	0	0
Black walnut	52,646	1,541	33,487	15,608	1,336	674
Black cherry	283,912	49,815	146,387	65,962	13,874	7,874
Butternut	12,562	3,728	4,308	2,023	1,577	926
Elm	209,026	88,593	73,585	36,193	6,874	3,781
Paper birch	47,186	11,172	23,599	11,235	738	442
Other hardwoods	235,424	62,716	95,434	46,065	18,697	12,512
Noncommercial species	130,313	95,587	--	--	22,739	11,987
Total	5,187,631	762,280	2,812,034	1,317,821	182,839	112,657
All species	5,584,595	835,492	3,024,207	1,413,594	192,560	118,742

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Table 74.--Sampling errors[1/] for estimates smaller than the Unit totals of volume, net growth, removals, and area of commercial forest land, Southern Lower Peninsula, Michigan, 1980

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	- - - Million cubic feet - - -			- - -[2/] Million board feet - - -		
1	5,963.5	19,195.8	1,131.6	8,973.4	105,512.1	8,934.6	4,7464.4
2	1,490.9	4,798.9	282.9	2,243.3	26,378.0	2,233.6	11,866.1
3	662.6	2,132.9	125.7	997.0	11,723.6	992.7	5,273.8
4	372.7	1,199.7	70.7	560.8	6,594.5	558.4	2,966.5
5	238.5	767.8	45.3	358.9	4,220.5	357.4	1,898.6
10	59.6	192.0	11.3	89.7	1,055.1	89.3	474.6
15	26.5	85.3	5.0	39.9	468.9	39.7	211.0
20	14.9	48.0	2.8	22.4	263.8	22.3	118.7
25	9.5	30.7	1.8	14.4	168.8	14.3	75.9
50	2.4	7.7	0.5	3.6	42.2	3.6	19.0
100	0.6	1.9	0.1	0.9	10.6	0.9	4.7

[1/] At the 68-percent probability level.
[2/] International 1/4-inch rule.

Hahn, Jerold T.
Timber resource of Michigan's Southern Lower Peninsula Unit. 1980. Resour. Bull. NC-66. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1982. 119p.

The fourth inventory of the timber resource of Michigan's Southern Lower Peninsula Survey Unit shows a 12 percent decline in commercial forest area and a 26 percent gain in growing-stock volume between 1966 and 1980. Presented are highlights and statistics on area, volume, growth, mortality, removals, utilization, and biomass.

KEY WORDS: Statistics, area, volume, growth, mortality, removals.